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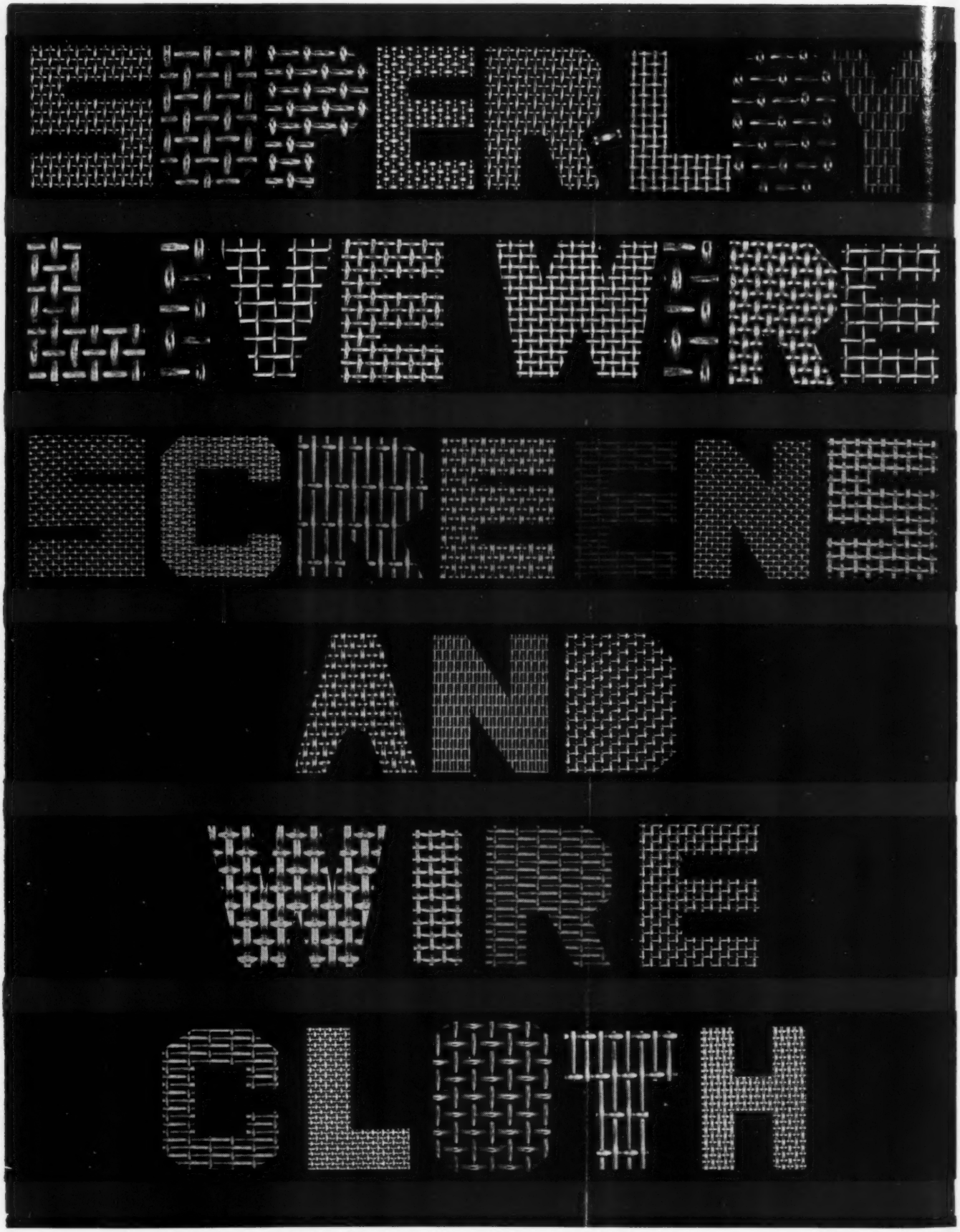

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Vol. 41 DECEMBER 1948 No. 6

PIT AND QUARRY

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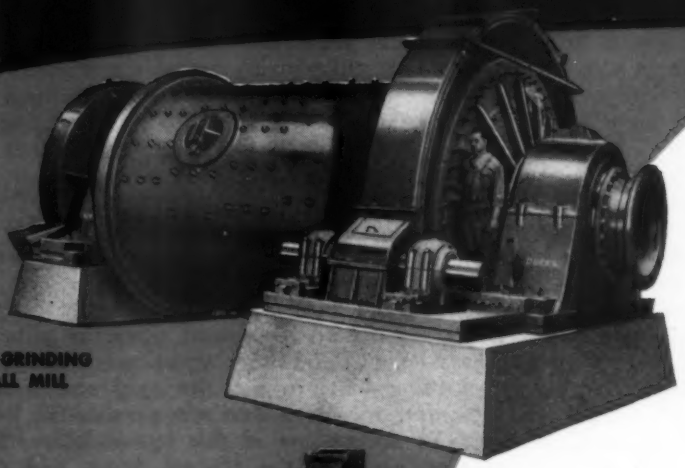

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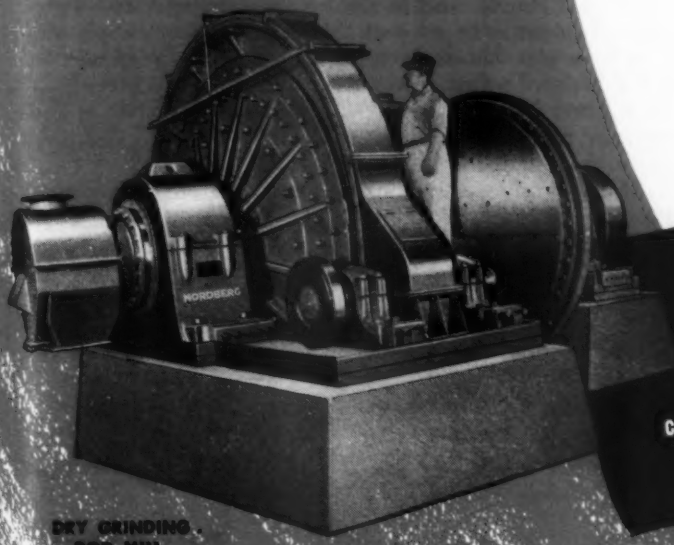

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editorial

The Aged and the Handicapped

THE problem of providing jobs for the aged and the physically handicapped is one that has always been with us, especially in times of low business activity. Sporadic efforts by public and private agencies, among others, have achieved limited success but they have helped to bring the problem into the spotlight of public attention. As a result, increasing recognition is being given by business and industry to the special qualifications of aged or physically impaired workers when properly selected and placed on suitable jobs. Basically this problem is the responsibility of business and industry, and it now appears that a real effort is to be made by them.

Many companies have individually been working in this direction and have found that physically impaired workers have job performance records which compare very favorably with those of the able-bodied. This is especially true with respect to productive efficiency, accident rates, job turnover and absenteeism. Many surveys have been made which compared favorably the reliability and relative productivity of physically impaired workers with those of workers not so handicapped.

Employees are also becoming increasingly alert to the important contributions which older workers are making and can make to our nation's productive effort. According to the record, oldsters suffer less work injuries and are absent less often than the average worker. According to the U. S. Bureau of Labor Statistics the over-40-year-olds do about 25 percent better on absenteeism than men under 30 — and their experience pays off even more sharply in avoiding work injuries.

The same source says that, in spite of all current efforts, there still remains a sizable reservoir of employable manpower which should and can be used more fully. Various federal government agencies are active in promoting interest in the job placement of these employable persons. Public and private agencies have also been working through the President's committee on Employment of the Physically Handicapped Week and have stimulated interest in expanding job opportunities for the handicapped.

This problem is, however, basically that of business and industry and these must carry the primary responsibility. Federal and other agencies can stimulate and support movements to put the aged and handicapped to work, but only employers can provide the job opportunities. In recognition of this responsibility, the Chamber of Commerce of the United States and the National Association of Manufacturers are making a joint effort to place and to keep placing handicapped and older employables in suitable, self-sustaining jobs.

All employers are urged to help this important cause by placing one or more such individuals in jobs commensurate with their abilities. Because of the nature of the work it is probably somewhat more difficult to place such men in nonmetallic-minerals-producing operations than in most other industries, but there are types of work which they can do as well as or better than the young and the able-bodied.

Stream Pollution

CONGRESS, after nearly 50 years of controversy, has finally approved federal control of stream pollution. Under the provisions of the new Barkley-Taft Water Pollution Control Act, the U. S. Public Health Service will survey the nation's rivers and streams. Polluters will be ordered to clean up their discharged wastes; and if corrective steps are not taken, the federal government, with the approval of the state, may sue non-cooperators.

Ample funds will be available for this survey, for the Public Health Service and Federal Works Agency programs, and for investigations and some corrective construction. Grants will be made to states, cities and other public agencies for engineering and economic investigations. During each of the next five years, under this act, funds may also be loaned to assist public agencies in building control facilities, to prevent untreated sewerage from entering waterways. Loans will also be available to state and local governments, who in turn are to assist industry in building individual treatment and corrective facilities.

The first part of this program, the survey of rivers and streams, will make possible for the first time a fairly accurate estimate of the cost of eliminating present industrial pollution in this country. That the cost will be tremendous is a foregone conclusion in view of what some industries are now spending to treat industrial wastes. It is believed that expenditures will be comparable to the estimated $8 billion which the Public Health Service estimates will be necessary for water supplies, sewerage, garbage and refuse disposal and rural sanitation.

The nonmetallic minerals industries are, as a whole, very unimportant factors in stream pollution, as their wastes are largely inert materials. Their chief contribution to stream pollution has largely been indirect, through the discharge into streams of sand, silt and other materials which tend to settle out and impede the free flow of water in these streams. In the vast majority of cases a producer can make his contribution to this cause by building a simple, and in the long run inexpensive, series of settling tanks to remove this material from wash and process water before it is discharged into a stream or other body of water. Over the years many instances have been cited in these pages where producers have in this manner reclaimed salable fines which in some cases have more than paid for the investment.

Many producers will profit directly from this stream cleanup program. Producers of aggregates and cement will profit through the vast amount of construction work which will be done, and for which they will supply the materials. Lime producers will profit through a greatly increased demand for lime for the treatment of all kinds of wastes—there has been a growing demand for lime for this purpose for some years.

Walter E. Trauffer

news of the industry

PIT AND QUARRY

National Gypsum Company Quarry Force Establishes 10-Year Safety Record

Ten years without a lost-time accident is the unusual record established by the personnel at the National Gypsum Company's National City, Mich., quarry. (The last mishap involving lost time was in August, 1938, when one of the men turned his ankle and remained at home for one day.)

This enviable record was not just a chance affair. After the last serious accident (in February, 1937) the management purchased new quarry cars, and when the quarry was moved farther from the plant, trucks replaced the locomotives used for haulage. Electric blasting removed the former hazards of fuses and caps. Bulldozers and scraper loaders lightened the work of the men and left the dragline more readily available for developmental work.

About this time Luther Jones, quarry superintendent, formed a safety plan, which was put into operation with the assistance of the men. Each worker was urged to guard the safety of his mates, as well as his own. Training each "hand" in all the jobs at the quarry resulted in fitting him to assist any other worker in an emergency.

Also helpful in keeping men safety conscious were two U. S. Bureau of Mines first aid courses. The National Safety Council has aided, too, with safety posters and films like *Jackhammer Safety*.

During the 10-year period nearly 750,000 pounds of dynamite were used to blast 1,348,663 tons of gypsum from the quarry face—all hauled in trucks to the plant a mile away. Not a lost-time mishap was reported due to blasting or trucking operations.

Production Capacity Upped By Expansion at Certainteed

An expansion program designed to increase the production capacity of the mill and enlarge its office facilities is under way at the Certainteed Products Company's plant at Blue Rapids, Kan.

Additional machinery for processing gypsum products will be housed in a new steel structure; and a testing laboratory will be installed in the office building.

Coming Events

January 10-14, 1949—Philadelphia. Third National Materials Handling Exposition, Convention Hall.

January 16-20, 1949 — Chicago. 30th annual meeting, Associated Equipment Distributors, Stevens Hotel.

January 18-20, 1949—Washington, D. C. Annual convention, National Agricultural Limestone Association, Hotel Statler.

January 31-February 3, 1949—Cleveland. Annual convention and exposition, National Concrete Masonry Association, Cleveland Auditorium.

February 7-9, 1949 — New York. Annual convention, National Crushed Stone Association, Hotel New Yorker.

February 13-17, 1949—San Francisco. Annual meeting of American Institute of Mining and Metallurgical Engineers.

February 14-18, 1949—New York. 33rd annual convention, National Sand and Gravel Association, Hotel New Yorker.

February 14-18, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

February 21-22, 1949—Chicago. Annual convention, Agricultural Limestone Institute, Edgewater Beach Hotel.

February 22-25, 1949—New York. 45th annual convention, American Concrete Institute, Hotel Pennsylvania.

February 28-March 4, 1949—Chicago. Spring meeting and Committee Week, American Society for Testing Materials, Edgewater Beach Hotel.

Arizona Portland Cement Begins Construction of $3,000,000 Plant at Rillito

Temporary offices of the Arizona Portland Cement Co., opened on November 15 at Rillito, and construction of the firm's $3,000,000 cement plant at that location will start as soon as posible, according to E. E. Duque, president. The site is 18 miles northwest of Tucson.

The contract for construction of the plant has been awarded to the Fisher Contracting Co., of Phoenix. The power plant, which will furnish electricity is expected to be completed within the next 30 days by Headman, Ferguson & Carollo, Phoenix.

Completion of the entire plant is anticipated in the late summer of 1949. Its capacity will be about 2,000 barrels (8,000 sacks) daily. It is expected that the cement production will not only be enough for Arizona, but that some can be sold in New Mexico. The plant will employ about 150 men.

Mr. Duque is also president of the California Portland Cement Co., with headquarters at Los Angeles. Other officers of the Arizona company, which will operate the state's only cement plant, are L. E. Bancroft, vice-president, secretary and treasurer, and Ralph W. Bilby, Tucson, assistant secretary and treasurer.

N.I.S.A. Meetings Scheduled At Popular Resort Hostels

At the recent semi-annual meeting of the National Industrial Sand Association at White Sulphur Springs, W. Va., the dates for the 1949 annual and semi-annual meetings were announced. Both will be in familiar surroundings.

On May 11-13 members will gather at the Homestead, Hot Springs, Va., for the association's annual meeting. The semi-annual convention will be held at The Greenbrier in White Sulphur Springs.

The addition of a sand-and-gravel department to its products has been announced by officials of Beerman & Jones of Sonora, Calif. The material is taken from the firm's own pits along the Tuolumne River and stocked at its Keystone plant. Present processing capacity is approximately 100 tons per hour.

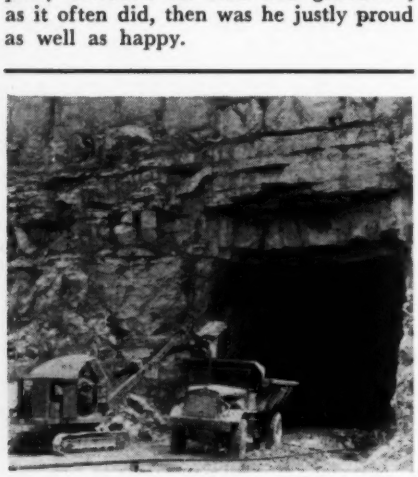
Lime Industry Loses T. F. Robinson, Veteran of Gypsum Lime & Alabastine

The lime industry lost a grand old man when T. F. (Frank) Robinson died suddenly at his home in Woodstock, Ont., Canada, on October 21, 1948. Mr. Robinson, who was in his 82nd year, spent practically all his life in the production of gypsum and lime, and at the time of his death was superintendent of the Beachville lime plant of the Gypsum Lime and Alabastine Company.

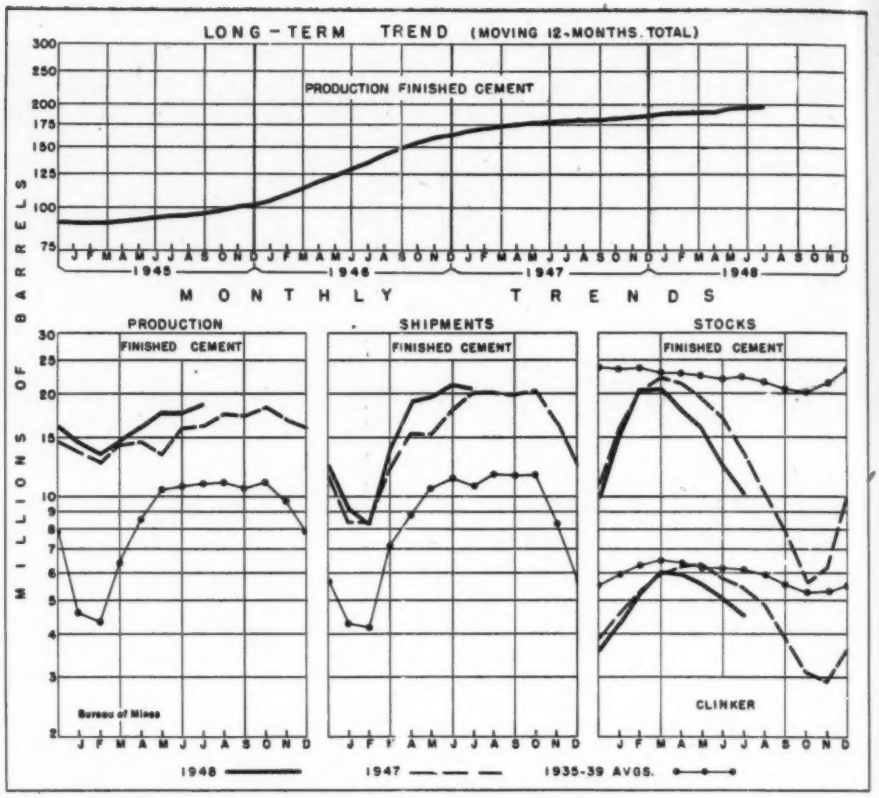
It was in the 1890's that Mr. Robinson entered the industry, in the service of the United States Gypsum Company at their plant in Alabaster, Mich. He remained with them for 30 years. The next 30 years he spent in Canada working for the Gypsum Lime and Alabastine Company. The first six years he was superintendent of their dolomite finishing lime plant at Elora; then he was transferred to Montreal, where he erected and operated a gypsum plaster mill and board plant; and for the last 20 years he was superintendent of the high calcium lime plant at Beachville. Altogether he spent over 60 years in the manufacture of gypsum and lime.

So great was Mr. Robinson's interest in the industry that he raised his two sons to do the same work—one, Jack Robinson of Toronto, is in charge of all the lime plants of the Gypsum Lime and Alabastine Company; and the other, Leo Robinson of Caledonia, is in charge of the gypsum plants of the same company.

Mr. Robinson will be remembered by many in the industry who came in contact with him during the long years of his career and will be particularly missed by those who worked with him, as he was pleasant and just in all his dealings. He remained young in heart and was an enthusiastic sportsman, particularly keen on hunting, never missing a deer hunt. He was planning on going again with the boys this year, and when the hunting party included his sons and grandsons, as it often did, then was he justly proud as well as happy.



• Loading crushed and uncrushed stone to trucks is the task of this Bucyrus-Erie ⅜-cu. yd. shovel, pictured outside the entrance to an underground quarry near Yellow Rock, Ky., operated by the Kentucky Stone Company, Louisville, Ky. The company produces 27,000 tons of stone per month for use on highways and railroads.



Summary—The portland cement industry produced 18,721,000 barrels of finished cement in July, 1948, as reported to the U. S. Bureau of Mines. This figure is 15 percent greater than that reported for July, 1947. Mill shipments totaled 20,994,000 barrels, an increase of 4 percent above the July, 1947, figure, while stocks of 10,148,000 barrels on July 31 were 24 percent below the July, 1947, totals. Clinker output in July, 1948, amounted to 18,347,000 barrels, representing an increase of 13 percent over the corresponding month of the previous year.

Production—The output of 18,721,000 barrels of finished cement in July, 1948, came from 146 plants located in 34 states and Puerto Rico, whereas in the same month of 1947, 16,342,000 barrels were produced in 147 plants. Clinker production increased 13 percent over the July, 1947, figure.

Shipments—Mill shipments, 20,994,000 barrels, increased 4 percent above the July, 1947, figure. The demand for cement in July, 1948, as indicated by mill shipments, dropped slightly below the output for the previous month (June, 1948)—21,426,000 barrels, but exceeded the record output of 20,562,000 barrels reported in October, 1947. Shipments were higher in 12 districts and lower in 6, than that reported in July, 1947. The changes range from a decrease of 16 percent in the Iowa district to an increase of 32 percent in the Oregon and Washington district.

Cementos del Pacifico, S. A. Installing New Equipment

Cementos del Pacifico, S. A., Mazatlan, Sin., Mexico, will soon start up an addition to its plant, consisting of a 150-ft. kiln, a 7- by 22-ft. mill, and a cooler, all from Kennedy Van Saun. The new equipment, expected to be put into operation in January, will double the present capacity of the plant.

Ramon Salcido is president of Cementos del Pacifico. The plant is located at Estacion Marmol, Sin.

Marquette Annual Report Wins Oscar in '47 Contest

At the Eighth Annual Awards Banquet at New York's Hotel Pennsylvania on October 21 W. A. Wecker, president of the Marquette Cement Manufacturing Company, accepted for his company the gold "Oscar" symbolizing excellence in industrial reporting.

Marquette's annual report for 1947 was selected for first place honors from among 4,000 corporate reports judged by an independent board of judges. These publications had been entered in a competition conducted annually by *Financial World* magazine. The presentation was made by Donald V. Fraser, president of the Missouri - Kansas - Texas Railroad, whose report won the coveted award for 1946.

Runners-up for honors were reports published by the General Portland Cement Company of Chicago (second place) and the Lone Star Cement Company of New York (third place).

Virginia Highway Department Honors Veteran of 40 Years

C. S. Mullen, chief engineer for the Virginia Department of Highways, completed 40 years of continuous service with that organization on November 1.

At a luncheon given by department officials in his honor, he was presented a 40-year service pin. Making the presentation was A. H. Pettigrew, right-of-way engineer, only other official to wear the 40-year pin.

Yuba to Design King-Sized Bucket-Ladder Dredge for Panama Sea-Level Project

Military and engineering investigations in the past year have concluded that the existing lock-type Panama Canal must be converted to a sea-level waterway if it is to remain navigable under attack from modern weapons in this atomic age. Construction, it is estimated, would take 10 years and cost $2,485,000,000.

Excavation would be the greatest ever undertaken, totaling 1,070,000,000 cu. yds., of which 320,000,000 would be dredged. Maximum depth of dredging is estimated at 145 ft. below the existing level of Gatun Lake, an unprecedented depth.

Because of its broad experience in the gold-dredging field, the Yuba Mfg. Co. of San Francisco was commissioned to design deep-digging, high-capacity bucket-ladder dredges. Dredge operators in the sand-and-gravel industry will be especially interested in this development.

As developed by Yuba engineers, the hull of one of these super-dredges will be 371 ft. long, with 100 ft. beam and 13 ft. depth. Four 1,600-hp. diesel-electric generators on board would provide the power for the total connected load of 5,294 hp., including the 2,500-hp. main drive. Total length of the digging ladder to allow excavation at the 145-ft. level would be 239 ft.

Since the major cost of rock excavation in the wet is in drilling and blasting, it was desired to provide the largest buckets practicable to permit maximum spacing of drill holes. Representatives of Yuba and the Panama Canal agreed that the 2-cu. yd bucket was the maximum because of difficulties in casting larger buckets and the resulting tremendous weight of the digging ladder and bucket chain; this size is specified for the dredges. The 2-cu. yd. bucket, incidentally, is three times the capacity of the largest buckets now used in placer dredging.

Spoil would be disposed of by scows, loaded by conveyors on both sides of the dredge. Considerations was also given to a stern conveyor system for disposal of spoil ashore but was abandoned because of the extreme length of the required conveyor lines and because of difficulties in designing the spud arrangement.

U. S. Mines Bureau Reports Diamond Drilling for Raises

Diamond-drilling was used successfully in opening an air shaft from underground workings at the Bellefonte limestone mine of the National Gypsum Company in Centre County, Pa., according to a report released by the U. S. Bureau of Mines. In consequence, this method is to be used there in driving 300-ft. "raises," or connections between different levels in the underground mine.

Safety and speed are among the advantages of the new method revealed by the Bellefonte experience, the circular states. A 5¾-in. hole was drilled with a core bit in the center of the shaft, and parallel 1½ in. holes for blasting were drilled with non-coring bits. The small holes were charged and fired electrically from the surface, but blasting progressed by 10-ft. steps from the bottom of the shaft upward.

A free copy of Information Circular 7477, *Shaft Sinking by Diamond Drilling, Bellefonte Mine, National Gypsum Company, Centre County, Pa.* by McHenry Mosier, chief, College Park, Md., Branch, Bureau Mining Division, can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

Finnish Cement Firm Supplies One-Half of Country's Output

Reports from a British trade journal, *Cement and Lime Manufacture,* state that the firm of Pargas Kalkbergs Aktiebolag is the largest cement manufacturing concern in Finland, with an annual output of about 250,000 tons of the country's total output of 500,000 tons.

This company operates three kilns and plans to install a fourth as soon as it is available. Coal is obtained from the United Kingdom and Poland and gypsum from Cyprus and French North Africa. Kilns and other heavy equipment were supplied by F. L. Smidth of Copenhagen and electrical machinery mainly by Strombergs of Helsinki. The firm's lime plant produces about 60,000 tons of lime annually.

20 Percent Increase Seen In Lone Star Dallas Output With Addition of New Kiln

In the Dallas, Tex., area hope for easing of the current severe cement shortage was seen in an announcment made by Lone Star Company officials that the firm will soon begin building a new kiln which will increase output at the local mills by 20 percent.

According to V. J. Van Reekum, plant superintendent, the kiln—fourth to be installed at this plant—will be ready for use early in 1949. It will be 275 ft. long and approximately 10 ft. in diameter.

Another expansion project under way at the Dallas plant is the enlargement of the quarry, which will soon have space for storing 10,000 tons of crushed rock. In addition, the company is building a slurry basin 65 ft. in diameter.

Utah Rock Asphalt Co. Spends $40,000 to Increase Output

Utah Rock Asphalt Co. recently announced a $40,000 improvement project at Sunnyside and the leasing of its plant to the Ute Rock Mining Co.

A new crusher was installed, a new receiving bin built and existing machinery reconditioned. At the mine a new loading bin was built, overburden was stripped from an area to be mined, and road improvements were undertaken. Officials said that asphalt output should be increased to 400 tons daily due to the improvements.

• A trackside scene at the plant of the Ohio Gravel Company's plant at Newton, O. A Lorain TL-20 self-propelled crane is employed to charge bins and stockpiles and to load out gravel in the company's extensive yards.

N.A.L.A. Convention Plans Include Arrangements for Attending Inauguration

According to latest information from headquarters of the National Agricultural Limestone Association, Inc., that group's board of directors will meet in Washington, D. C., on January 17, and the annual convention will open the next day, January 18, at the Hotel Statler.

The routine business session will be, as usual, the first item on the convention program, with a luncheon and a special speaker following. Plans for the afternoon session have not been completed. At the banquet that evening Dr. William Albrecht (University of Missouri) will address the members on *Declining Soil Fertility, Its National and International Implications.* The program for the second day is still in the making.

Convention sessions on January 20 will be planned so that members will be able to attend the inaugural parade and ceremonies at the Capitol. Arrangements have also been made for the installation of a television unit in the meeting rooms for the use of those who prefer to take in the inaugural activities in this manner.

Crushed and Broken Stone Production Increases in 1947

The output of crushed and broken stone in the United States in 1947, as reported by producers to the U. S. Bureau of Mines, totaled 206,136,330 short tons, valued at $248,451,960. These figures represent an increase of 16 percent in quantity and 23 percent in value over the 1946 figures. Included in this total is stone used for concrete aggregate, railroad ballast, metallurgical use (flux), agricultural limestone, refractory stone, riprap, stone sand, alkali works, calcium carbide works, sugar and glass factories, paper mills, and in various other chemical and manufacturing processes. Stone used in the manufacture of lime and cement, asphaltic stone, and slate used for granules and flour are not included in this total.

Crushed and broken stone used for concrete aggregates and railroad ballast (60 percent of total output in 1947) increased 15 percent in quantity and 26 percent in value, as compared with 1946. Eighty-nine percent of the 107,077,590 short tons used for concrete aggregate was produced by commerical operators and 11 percent by government agencies.

Metallurgical uses, which took 16 percent of the total crushed and broken stone in 1947, showed an increase of 29 percent in quantity and 38 percent in value. Limestone for agricultural purposes (11 percent of total tonnage of crushed stone in 1947) decreased 1 percent in quantity but increased 8 percent in value, as compared with 1946. Other uses consumed 13 percent of the total, or 27,532,710 short tons, valued at $45,367,803.

In 1947, limestone, including dolomite, constituted 73 percent of all crushed and broken stone sold (excluding that used for making cement and lime), and was quarried in all but four states.

A. G. Rydstrom Named Adviser By Ideal Cement Co. Officials

Officials of the Ideal Cement Company have secured the services of Arthur G. Rydstrom of New York, N. Y., as financial adviser in the administration and operation of the Boettcher industries.

Mr. Rydstrom was at the time of his departure to Denver senior vice-president of the Bankers Trust Company of New York. He has been made a director of the Ideal Cement Company and a vice-president of the Boettcher foundation for educational aid.

Large-Scale Expansion Plans Made for Indian Cement Works

Seven schemes for the expansion of the cement industry in India have been sanctioned by the Government of India. These schemes, it is expected, will add more than 1,000,000 tons of cement to current production.

Five new factories will be set up. Of these four, with an annual capacity of 150,000 tons each, will be located in Bombay, Baroda, Jaipur and Rewa. The fifth, with an annual output of 400,000 tons, will be in the United Provinces. In addition, sanction has been given for the expansion of two cement factories in Bihar with a capacity of 130,000 tons each. Two further units, each with a capacity of 150,000 tons, have also been sanctioned.

Before August 15, 1947, the number of cement works in undivided India was 24, with an overall capacity of a little over 2,000,000 tons. Of these 19 are now situated in Indian Union territory.

American Potash & Chemicals Signs Union Wage Agreement

Employees of the American Potash & Chemical Corporation at its Trona, Calif., plant were recently given an 11-cent-an-hour across the board wage increase as members of the Alkaline Salt Workers Union, Local 414.

The wage hike, effective December 1, was embodied in a two-year contract between the company and the union, an affiliate of the C.I.O. International Union of Mine, Mill & Smelter Workers. The agreement provides for a re-opening of the subject of wages after one year.

G. P. Paine Named Director Of Promotions for A.S.A.

George Porter Paine has been appointed director of promotion of the American Standards Association, it was announced by Vice Admiral G. F. Hussey Jr., U.S.N. (Ret.), secretary. He will continue to act as executive assistant, to Howard Coonley, chairman of A.S.A.'s executive committee.

Mr. Paine has been connected with The John Price Jones Corporation of New York, and was on the staff of the National Association of Manufacturers prior to World War II.

$2,500,000 Cement Plant Soon to Be Transported From California to Alaska

Alaska is soon to have a new $2,500,000 cement plant, with raw material supplies drawn from a magnesium-rich limestone deposit containing at least 20,000,000 tons. Site of the plant is Windy, located on the Alaska Railroad 20 miles south of McKinley Park. It will serve the railroad belt area, for there is a big demand for cement by the military, Civil Aeronautics Administration, Alaska Highway, the railroad and many private contractors. The manufacturing facilities will be sent up from a dismantled plant in the San Francisco Bay area of California.

With construction costs rising 50 to 200 percent more than in the United States, Alaska has had great difficulty in expanding, partly due to the cost of cement. Product of the new plant, it is figured, will sell for considerably less than the "imported" cement from the United States. After 60 months of operation the plant investment reportedly will be amortized, and cement distribution can be profitable for shipment as far as southeastern Alaska. Output will be 1500 barrels a day, with year-round operations as planned.

New 30 T.P.H. Hammermill To Help Meet Agstone Demand

At the H & R Stone Company's plant at Ridgeville, Ind., the installation of a new hammermill and conveyors has been the cause of an unusual amount of activity. The new equipment, which will produce 30 tons of crushed stone per hour, was ordered by officials in an attempt to "catch up" on back orders and then keep pace with the ever increasing demand for agricultural limestone.

Last spring the company installed several new pieces of machinery to meet the rising demand for its products; but that wasn't enough. The new hammermill had to be added.

Turkish Cement Production Slated for Early Expansion

In order to meet the rising demand for cement in Turkey, the plant at Sivas will be enlarged to double its capacity, which is currently between 90,000 and 105,000 tons per year. Two completely new plants will be built, one at Izmir and a second at Zonguldak. Turkey requires approximately 600,000 tons of cement annually, and present production is only about 400,000 tons.

The Sumerbank in Ankara recently awarded a contract to the Gloeckner-Humboldt Werke, A.G., of British-occupied Germany to execute plans for enlarging the Sivas plant. Construction will be completed in 18 months, and payment will be in tobacco and other export items.

Building in 9-Month Period Shows 30 Percent Gain Over Figures for 1947

F. W. Dodge Corporation has reported that building and heavy engineering construction is at a level 30 percent higher than a year ago on the basis of dollar valuation of contract commitments reported for the 37 states east of the Rocky Mountains during the first three quarters of the year.

A spokesman for the fact-finding organization said that the record is being established principally because of gains in noncommercial building contracts—educational buildings, hospitals, religious, social and recreational structures—held up during and immediately after the war by the priorities system in force.

Contributing also to the upward trend was the striking increase in investments for single family dwellings built to owners' orders — another classification of building which was largely a priorities-system casualty.

A summary of building and engineering contracts awarded during the first nine months in the states east of the Rockies showed a total of $7,345,773,000, as compared with $5,626,111,000 during the corresponding three quarters of last year.

The over-all increase in nonresidential building awards in the 37 states was 46 percent, with a nine-month total of $2,843,379,000, while residential contracts totaling $2,790,476,000 reflected a 22 percent gain over last year. Heavy engineering awards for bridges, highways, other public works and utilities advanced to a total of $1,711,918,000 to show a gain of 23 percent.

Mishap at Marquette Plant Breaks C. Girardeau Record

After having established an outstanding safety record of 2678 days without a lost-time accident, the crew of the Marquette Cement Manufacturing Company's plant at Cape Girardeau, Mo., saw that record shattered on October 21. On that day William T. Foeste suffered several broken ribs and a slight pelvic fracture. It was the first lost-time accident since June 20, 1941.

Mr. Foeste, a crane fireman with a 24-year service record, was working with another employee unloading coal. A car had been switched to another track, but it did not clear the switch. The men sought to move the car without taking the self-propelled crane around another track by using a piece of timber as a push bar between the crane and the coal car. The timber broke and Mr. Foeste, who was holding it, was injured.

Power Line Completed from Fort Hall to Simplot Co. Mine

Completion of a new power line designed for 46,000 volts (presently operating at 12,500 volts) has been announced by the Simplot Fertilizer Company of Pocatello, Idaho. The line transmits power from Fort Hall, Idaho, to the Simplot phosphate mine, a distance of 17 miles.

Approximately 200,000 tons of superphosphate is made annually in the Simplot plant; and the firm is currently doubling its floor capacity for curing and storing the product.

Skanska Cement Aktiebolaget Building New Plant in Sweden

The Skanska Cement Aktiebolaget has nearly completed the building of a new cement plant at Vika, 50 miles south of Stockholm, Sweden. The construction of the plant was begun in 1945, and production is expected to get under way on January 1, 1949. Production capacity will be 6,000 bbl. per day. A dolomitic rock is utilized, and flotation of the raw materials is necessary in order to remove some of the magnesia.

Most of the equipment was supplied by F. L. Smidth & Comanpy, New York, N. Y. The plant has two Unax kilns. Per Hakanson is the chief chemist of Skanska.

Permanente Plant Crew Wins Safe Driving Contest

A perfect driving record for the year ending June 30, 1948, won The Permanente Metals Corporation's Natividad (Salinas, Calif.) lime and burned dolomite plant first place award in the National Safety Council's 17th annual fleet safety contest.

The award was received at the National Safety Council Congress in Chicago by Peter Juster, one of the Natividad crew who helped drive the fleet to its victory, and who was chosen by his fellow drivers to represent them at the presentation luncheon at Chicago's Hotel LaSalle.

Natividad's fleet of 18 vehicles, including heavy 60-ft. trucks and trailers, traveled 420,000 miles during the contest period without an accident of any kind, to win first place in its division of the national competition. More than 1,500 fleets from all over the country were entered in the contest, and the Permanente drivers were declared winners in Group II — inter-city truck, private carrier division.

• On his way up is Peter Juster, chosen by Permanente fellow workers to receive a safe-driving award.

State Agencies Exempt N. C. and Kansas Producers From Freight Hike

Road aggregates, sand, gravel and stone were exempted from an increase of 5 percent in North Carolina intrastate rail freight rates allowed on October 28 by the State Utilities Commission.

The new boost for other commodities was in addition to a 20 percent interim increase allowed last March 31. The total general increase of 25 percent was ordered in lieu of the earlier 20 percent boost. The additional 5 percent had been asked shortly after the Interstate Commerce Commission allowed a 25 percent increase on interstate shipments.

Cement, gravel and other road building materials were also exempted in Kansas from a 10 percent increase in intrastate rail freight rates granted on October 27 by the Kansas Corporation Commission. The agency held that an increase in freight rates for the exempted commodities would make rail transportation prohibitive and work a hardship on consumers as well as the railroads.

The order brought the Kansas rates for the commodities covered up to the full 20 percent increase authorized by the Interstate Commerce Commission for interstate shipments. The Kansas commission previously granted a 10 percent boost.

Grove Lime Company Plant and Equipment Damaged by Fire

A fire caused damage estimated between $7,000 and $10,000 at the plant of the M. J. Grove Lime Company near Frederick, Md., several weeks ago.

Buildings and equipment were destroyed or damaged and more than 80 truck tires were consumed, stated Robert B. Crothers, company president.

Word has been received that the Victor J. Nelson Engineering & Construction Company, 1560 Victory Blvd., Glendale, Calif., recently shipped four Nelson No. 5 inclined furnaces to its Argentine agent, Haido Industriale, at Buenos Aires. The furnaces will be installed in a large lime operation in that country.

UNIVERSITY OF MICHIGAN LIBRARIES

Dr. Frederick G. Cottrell Dies at 71 after Lifetime Of Service to Industry

Dr. Frederick G. Cottrell, one of the world's outstanding scientists, died on November 16 in California. He was 71 years of age.

The amount of scientific knowledge that Dr. Cottrell contributed to the United States and the world was enormous. One of his inventions, the patent of which he gave away, as he gave all his patents away, enabled American industry to save an estimated $20 million a year in chemical products that had formerly been considered waste.

From 1906 to 1909, while he was a chemistry instructor at the University of California, he worked on a process to precipitate the mists that occurred in the manufacture of sulphuric acid, causing considerable waste. Starting with the known fact that an electrically-charged wire introduced into a jar of smoke would cause the smoke to clear, Dr. Cottrell developed what came to be called the Cottrell Electrical Precipitator.

Used at first in sulphuric acid manufacture, his precipitator was adopted in lead smelting and cement plants. Later it was found that the waste products collected in the stacks of cement plants by this precipitator were so rich in potash that a number of cement plants went into the business of selling potash as an additional product—particularly during World War I, when our main source of potash was Germany.

Dr. Cottrell and three associates who had worked with him formed the Western Precipitation Corp. to develop his invention. They found themselves on the way to becoming rich. Dr. Cottrell had no intention of letting this happen and accordingly assigned his patents to the Research Corporation. This corporation exploited all of his patents, but put its profits back into scientific research. It helps support the Smithsonian Institute and many other scientific bodies, as well as individuals engaged in research. Last year the Corporation gave away $729,000.

In 1911 Dr. Cottrell left the University of California, where he was assistant professor of chemistry, and went with the U. S. Bureau of Mines. In 1920 he was named director, but he left this position in 1922 to become director of the Fixed Nitrogen Research Laboratory of the Department of Agriculture.

In this post he made another invaluable contribution to the United States. He solved the problem of Muscle Shoals —how to produce nitrates from the $150 million government plant.

Dr. Cottrell also was the inventor of a process that reduced the cost of helium from $1,700 a cubic ft. to 10 cents. For this he received the 1937 engineering award of the Washington Award Commission.

1947 Iron Blast-Furnace Slag Output Tops Earlier Records

In 1947 iron blast-furnace slag processed for commercial uses reached a new high of 19,581,679 short tons, valued at $19,525,482, a figure 17 percent above the 16,706,792 tons, valued at $14,869,839, in 1946. These statistics are based on a canvass conducted by the National Slag Association, of the 38 companies operating 58 plants that prepare iron blast-furnace slag for commercial use. The results of this canvass were assembled in cooperation with the U. S. Bureau of Mines.

Screened air-cooled slag, the major product, reached a total of 16,712,177 short tons, an increase of 17 percent over the 1946 figure. Of this total, 15,426,367 tons, or 92 percent, was used as railroad ballast, as aggregate in portland cement concrete, bituminous construction of all types, miscellaneous highway construction uses, and in the manufacture of concrete block. The remainder of the screened air-cooled slag was consumed in the manufacture of mineral wool, roofing granules, sewage filters, agricultural uses, etc.

A notable development of the past year has been the substantial increase in the output of lightweight (expanded) slag. Production in 1947 totaled 1,130,636 short tons—46 percent more than the tonnage reported for 1946.

Western Mineral Products Co. Opens New Plant at Omaha

The Western Mineral Products Company has started operation of its new plant at 36th and "I" streets, Omaha, Neb., where 60 carloads of vermiculite insulation per month will be turned out with a 24-hour working shift, according to L. D. Jorgensen, district sales manager. The Zonolite (mica) is expanded by heating it to 2,000 deg. F. and then cooling to 200 deg. in two minutes. It is used for a variety of insulation products and in plaster and cement.

The firm purchased a two-story building from the Sandusky Cooperage Company for $75,000 to house the new plant, which is one of 35 in the country. The Omaha plant ranks third largest in the Midwest. Others are at Minneapolis, home of Western Mineral, Chicago, Milwaukee, Wichita and Denver.

Zonolite to be processed at the Omaha plant will be shipped from Montana, near Libby, which is the largest supplier of the mineral, said Mr. Jorgensen.

Dimension stone (exclusive of slate) sold or used by producers in the United States in 1947, as reported by the producers to the U. S. Bureau of Mines, totaled 1,418,460 short tons, valued at $40,892,522, an increase of 3 percent in quantity and 24 percent in value, as compared with 1946. This total includes all dimension stone sold or used for rough construction, cut stone, slabs, mill blocks, rubble, monumental purposes, paving blocks, curbing, and flagging.

Lee Carpenter and son R. M. Carpenter of Eugene, Ore., have started construction of bunkers and installation of conveyors and a crusher at their gravel pit near Creswell, Ore. Their new business enterprise is known as the Creswell Sand & Gravel Co.

A.E.D. 30th Annual Meeting Scheduled for Jan. 16-20; 1200 Expected to Attend

During the week of January 16-20 members of Associated Equipment Distributors will meet for their annual session at the Stevens Hotel in Chicago. Advance registrations indicate that approximately 1200 persons will attend the meetings.

The five-day event will include many special features in addition to the "business in hand," for example the Westerners' Early Birds' Breakfast, the annual birthday party and a gala dinner party for the ladies.

Alcoa Conducts Extensive Conservation Project at Bauxite

At Bauxite, Ark., site of the bauxite operations of the Aluminum Company of America, an important conservation project has been under way for many years. The company had always maintained its own lumber supply from timber growing on its 6,000-acre holdings, for requirements for fencing and other construction ran high.

As early as World War I, trees planted by Nature began to cover the old dumps and gullied workings. Later, however, the officials instituted a systematic conservation program of reforestration to combat soil destruction caused by strip mining. In 1939 pine seedlings were obtained from the state forestry division and the company set about planting its vast acreage of scarred and pitted land, left unproductive for other crops. This fall 100,000 more trees were planted, bringing the total of seedlings put in to 200,000. In about 15 years the first plantings of this vast acreage of timber will be ready to thin and convert into merchantable timber. About two-thirds of the company's 6,000 acres now are growing pine timber. Careful and scientific methods of maintaining the growth keep the marching rows in clean, healthy condition.

Cement Producers Association Given New Rating in Mexico

A recent change in the status of the Cement Producers Association of Mexico has placed that organization in the category of "Camara de Cemento de Mexico" (Chamber of Cement Producers of Mexico).

Heading this body are Jesus Barrera, an executive of Cementos Mexicanos and Cementos del Norte (Monterrey), president, and Raul Arredondo, secretary of the Cement Producers Assn., manager.

The Gouverneur Talc Company will employ 65 men at its new plant near Gouverneur, N. Y., as soon as full-scale operation is under way, according to Robert McClellan, company manager. The official indicated that the first shipment of talc would be made very soon. Gouverneur Talc is a subsidiary of the R. T. Vanderbilt Company of New York, N. Y.

Fifth Biennial Exposition of Chemical Society Links Chemistry and Business

The 1948 National Chemical Exposition, held in the Chicago Coliseum, was the largest in the number of exhibits—201—of the five biennial shows sponsored since 1940 by the Chicago Section of the American Chemical Society. The show ran for five days, from October 12 to 16. Admission was limited to representatives of the chemical and allied industries.

Among the highlights were the facilities provided to aid manufacturers and business men seeking a solution of their production problems through the use of chemistry. Many availed themselves of the opportunity afforded to get authoritative information. This service was made possible by the maintenance of a technical bureau headed by Dr. Ward V. Evans, retired chairman of the chemistry department of Northwestern University, and now professor of chemistry at Loyola University, Chicago.

The presence and assistance of Dr. Evans epitomized the theme of this year's show and that of the National Industrial Chemical Conference, i.e., the aim to promote a better understanding of the science of chemistry in business and to engender a more closely knit relationship between chemistry and business.

One of the most helpful sessions of the conference was devoted to a symposium on *Chemistry in General Industry,* with Dr. R. C. Newton, vice-president of Swift & Company, as chairman.

On display were machinery and equipment for use in both industry and the laboratory. One of these was the phase microscope; another, the dual recordomatic titrator.

Marcus W. Hinson, exposition manager, announced that the sixth biennial show will be held in Chicago, September 5 through 9, 1950, concurrently with the fall meeting of the American Chemical Society in Chicago.

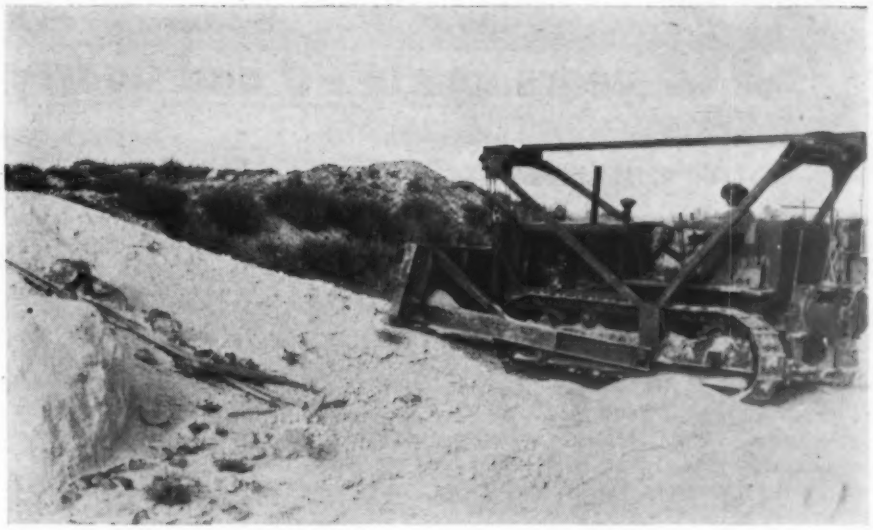
Hollywood Concern to Add Burned Lime to Products

The Crystal Lime Corp., Hollywood, Calif., which has been producing limestone products at its quarry and plant near Wrightwood (see PIT & QUARRY, September, 1948) is about to embark on the production of burned lime.

Contracts have been closed with the Victor J. Nelson Engineering & Construction Co. of Glendale, Calif., for the early installation of two Nelson inclined furnaces at the plant. The new lime plant will entail the expenditure of $80,000, including $31,500 for the two Nelson furnaces, or kilns.

The kilns will utilize oil as fuel, consumption being estimated at only 21 gal. per ton of lime produced. Only 3½ hp. is required to operate each kiln.

The plant is expected to be in operation early in 1949. Six additional Nelson furnaces are planned for installation later, making 8 in all and bringing the ultimate capacity to 120 tons of burned lime per day.



• A tractor-and-bulldozer earthmover exposes the diatomaceous material for excavation and removal.

Operation Sagebrush Yields Extensive Silica Supplies

Out in the sagebrush country beside the Columbia River in eastern Washington, where even the jack rabbits talk to themselves, there is one of the loneliest excavation jobs in the Pacific Northwest—lonely, yet profitable.

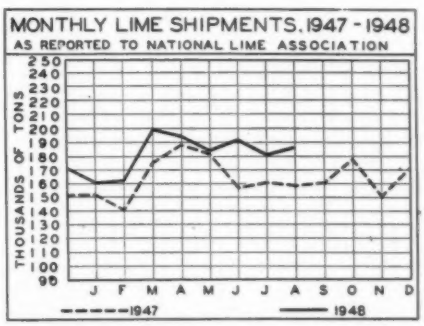
Here, where some prehistoric volcanic eruption sent lava down from the Cascade Mountains to dry up a fresh-water lake, is a huge deposit of diatomaceous earth which more than ever is in demand as an ingredient in cosmetics and for use in making cement, paint, asphalt and insulating material.

The silica is being mined in an open-pit operation for the Dia-Cousti-Lite Products Co., which has a plant at Quincy, Wash., 15 miles north of the site of excavation. The deposit of valuable earth extends for a radius of 20 miles from the digging location. To reach the powdery, chalk-white earth, a Model 50 "Caterpillar" tractor equipped with a bulldozer is employed to remove the overburden, which runs from one to seven feet in depth. Sand, a sandy lava rock and then a hardpan of diatomaceous earth constitutes the overburden which, once removed, leaves a relatively pure deposit of silica easily available.

The earth is moved by a LeTourneau Carryall to a ramp where trucks are loaded for the haul to the plant at Quincy. The LeTourneau rig carries loads up to 11 cu. yds. of snow-white earth, to the loading ramp. Although bulky, the load is not heavy, for the earth weighs only 8 lbs. per cubic foot. In one cubic inch of the stuff are an estimated 40,000,000 of the miscroscopic glassy shells of the tiny, one-celled marine plants which formed them.

Under the microscope the shells reveal beautiful markings, a fact which causes the diatom to be known as the "diamond" of plant life.

N. J. Hallowell, manager of the Quincy plant, is doing the open-pit mining work under contract with the Dia-Cousti-Lite Company. With the plant being expanded to make possible an output of 1500 tons monthly, additional excavation equipment is to be added, including a loading machine.



According to data collected by the National Lime Association, 45 companies in August, 1948, shipped 186,774 tons of lime (114,487 quicklime; 72,287 hydrate). Reporting companies represent 51.2 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 395,000 tons. Shipments by uses and grades for August, 1948, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	1,165	10,508
Building	14,615	39,066
Chemical	98,707	22,713
Totals	114,487	72,287

Three National Agencies Seek Uniform Fire Safety Code

Three national agencies—the Federal Housing and Home Finance Agency, the Building Officials Conference of America and the President's Conference on Fire Prevention—are presently working together to establish a uniform code for greater fire safety in new construction and to secure its adoption in areas now without proper building regulations.

Representatives of the three groups believe that standardization of materials and construction methods would cut costs and fire hazards substantially. The HHFA has set up a division for research to test materials and to promote uniform codes, thus eliminating costly testing in individual communities.

UNIVERSITY OF MICHIGAN LIBRARIES

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE activities of some of the many agricultural limestone associations then active were featured in the December, 1918, issue of PIT AND QUARRY. Perhaps the most important of these was the limestone conference held at the Lafayette Hotel, Buffalo, N. Y., on November 12. As a result of this meeting it was recommended that all manufacturers be required to report each month the amount of burned lime, ground lime and ground limestone shipped, and to whom shipped. Copies of these reports were to go to the state directors and to the county agents in the county to which the material was shipped, giving them valuable data for the benefit of all concerned. Until then this rule had applied only to the states of Ohio, Pennsylvania and New York.

Problems of distribution formed the principal topic of discussion at the meeting of the Southeastern Limestone Assn. on November 8 at Knoxville, Tenn. Those attending were taken on a field trip to the Tennessee Experimental Station, where extended experiments were being made in soil treatment, and to the operations of the American Ballast Co., at Mascott, where agricultural limestone was being produced on a large scale. This firm operated a farm in connection with the plant.

A group of Indiana agstone producers met in Indianapolis to discuss the possibility of forming a state association. The demand for this product in Indiana was said to be low because the benefits obtained from it had never been properly brought to the attention of the farmers. No definite action was taken at this meeting.

In this issue was a 4-page article describing Oxyliquit, a liquid oxygen explosive developed in Germany, which became known in this country only after World War I. With the German government requisitioning all the nitric explosives produced in that country during the war, private industries, including quarries, were forced to look for substitutes. German scientists who had been experimenting with this explosive for 15 years were given the opportunity to try it out on a large scale, and it was successful. This article described the advantages and the many limitations of this product, which was later introduced into this country with only limited success.

The featured plant in this issue was that of the Contractors' Stone & Gravel Co. near Cincinnati, Ohio. This plant featured a drag scraper of own design which carried the sand and gravel to a car which hauled it up an incline to the plant. This car dumped its load automatically. An original washer was also used which consisted, basically, of a screen revolving in water.

Another well illustrated article described the operations of the Waushara Granite Quarries Co. at Spring Lake, Wis. Granite paving blocks were the principal product and almost the entire output of these was used by the city of Chicago and the Chicago Surface Lines. Much of this pavement still remains, worn smooth but retaining all its original bumps. Other products included crushed granite and monumental stone.

Lime production statistics for 1917 showed that 3,786,364 short tons were produced, valued at $23,807,877. This was a decrease of 7 per cent in quantity but an *increase* of 28.6 per cent in value over 1916, the price having increased from about $4.00 for the past several years to $6.29 in 1917. Building was the largest single user.

There was also an item on the appointment of Norman G. Hough, then chief of the Construction Bureau of the National Lime Assn., by Committee C-7 on Lime of the A.S.T.M., to recommend a standard sand for plastering purposes. Mr. Hough was later for many years general manager of the association.

The first of a series of articles on *Modern Management Applied to Quarrying* gave an outline of the various phases of this important subject to be covered in this series.

The second and concluding installment of *Labor Saving in Limestone Quarrying* by Oliver Bowles covered blasting, loading, haulage, crushing and safety.

Sales and Earnings Climb for Cement, Nonmetallic Products

Sales and profits of nonmetallic minerals producing concerns and cement firms continue on an upward trend. Lone Star Cement Corporation's sales for the first nine months of this year were $39,369,314, and profits amounted to $9,749,391. Last year's figures were $34,493,467 and $8,423,761 for sales and profits, respectively. Pennsylvania-Dixie Cement Company's report during the same period, showed net income of $1,888,121, as against $878,728 for last year; net sales for 1948 (nine months) were $13,557,843, while last year's sales were $10,414,411. General Portland Cement Company ended the nine-month period this year with a total net profit of $3,051,200, as compared with $1,775,100 in the comparable period last year. Net sales for the January-September period reached $13,891,600 against $10,310,600 for the first three quarters in 1947.

For the 12-month period ending September 30, 1948, Lehigh Portland Cement Company reported a net profit of $5,093,571 after depreciation and provision for taxes. Profits of the Alpha Portland Cement Company for the same period totaled $3,935,308, as compared with $1,930,840 in 1946 and $2,736,289 in 1947.

In the field of gypsum products the United States Gypsum Company and subsidiaries entered for the first nine months of the year the following figures: net profit, $18,667,009 in 1948; $11,685,500 in 1947. National Gypsum Company sales for the three-quarter period amounted to $49,852,860 this year; last year, $37,085,730. National's net profits for the comparable periods were as follows: 1948—$6,545,548; 1947—$3,741,760. Certanteed Products Corporation realized a net income of $4,450,957 in the 9-month period last year, with sales aggregating $335,141,824. This year (first nine months) the sales figure is estimated at about $38,000,000. (This figure does not include operation data from Certainteed's subsidiary, Western Gypsum Company.)

The Warner Company of Philadelphia, manufacturers of sand, gravel and lime products is currently handling the largest volume of business in its history. During the first eight months of this year gross sales totaled $11,700,000, more than 30 percent over the 1947 figure for that period. Pacific Coast Aggregates Inc. of San Francisco reporting on the first nine months of the year, indicated net profits of $501,776, while last year's figure was $266,142; sales for this period in 1948 amounted to $9,470,265, as compared with $7,571,108 for the period ending September 30, 1947.

Kelley Island Lime and Transport Company increased its net sales for the January-September period from $5,201,313 in 1947 to $7,025,519 this year. Freeport Sulphur Company's balance sheet showed net profits of $2,842,729 this year (nine months), as against $2,180,648 last year. Jefferson Lake Sulphur Company reported net profits of $280,613 for the period ending September 30, 1948; last year's profits for the same period amounted to $228,088.

International Minerals and Chemical Corporation and subsidiaries chalked up net profits of $786,091 for the September, 1948, quarter, as against $360,000 last year. Sales for the third quarter this year amounted to $9,234,246, while 1947 sales for the same three-month period were $8,303,108.

Anti-Gas Tax Diversion Move Blocked by Florida Voters

Florida voters rejected at the general election a proposed state constitutional amendment providing limited protection against the diversion of automotive taxes to nonhighway purposes.

The measure would have dedicated the seventh cent of state gasoline line taxes to highway and airport purposes, instead of permitting its use for school and general governmental purposes as at present.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

THE post-election tumult and shouting are over. The poll-takers who were so unanimously wrong are trying desperately to re-establish public confidence in their soothsaying. Likewise, the commentators and columnists have used endless quantities of words to explain "where they went wrong."

By now it is clear that all that happened is that the average American voter merely exercised his right to vote for the man of his choice. And he showed a great deal more political "know-how" than is frequently assumed. For example, he showed that he could vote for his particular man even if it required making the political finesse of "splitting a ticket." How else does one explain the fact that Truman carried Iowa, Utah, and Wisconsin where the same voters elected Republican governors, while Dewey carried Connecticut, Delaware, and Indiana where Democrats won the governorships?

Here in Washington the prevailing spirit is a sense of relief. The office holders, the Bureau heads, and even the civil servants are no longer worried about where the axe will fall. There is also a new sense of hope. After two years of suffering the frustation of a divided government—a Democratic administration confronted with a Republican legislature—they now hope that they can again advance their programs. It is freely predicted that the words "mandate from the people", used with such telling effect by the members of the last Congress, will continue to be heard frequently, but this time from the other side of the aisle.

With the campaign smoke blown away, a more sober evaluation of what is likely to happen to business under a Democratic administration and legislature is possible. For this purpose, it is worth recalling the platform which the Democrats adopted last July, on which Mr. Truman ran and won. There is little doubt that he, at least, will try to put these pledges into effect.

If we limit the discussion to those which are likely to affect business men most we can pass over quickly the pledges which relate to foreign policy, civil rights, Palestine, Communism, and aid to education. Of specific importance to an industry closely related to construction is the fact that the platform favors slum clearance and low-rent housing projects authorized by federal law. If enacted, this legislation will certainly increase the demand for building materials. Another source of such demand arises from the pledge for an Army, Navy and Air Force adequate to assure security. But an expanded defense establishment is already under way and, barring a turn for the worse in foreign relations, the next Congress is unlikely to expand the armed services much more rapidly, although it might authorize funds for equipping the armies of the Western European countries.

The platform promises a halt to disastrous price rises. Price control legislation, even of the stand-by kind requested by the President from the last Congress, might affect some businesses adversely. But there is a real question now as to whether it will be needed. The last two months have seen a leveling off of prices. This is seen in both the wholesale and retail price indexes compiled by the Bureau of Labor Statistics. Should price rises reappear, many businesses, particularly small businesses, may welcome some price control on the basic commodities which they are required to buy. Some groups in Washington believe that this may be required to prevent a disastrous pinch between the rising cost of raw materials and the reticent demand of price-conscious buyers.

The platform also promises an intensive enforcement of the anti-trust laws. This is likely to occur for two main reasons. First of all, the Justice Department has been very busy recently starting many anti-trust suits. This was reported to be for the purpose of embarrassing an incoming Republican administration, many of whose backers are the defendants in those suits. Having been started, it is likely that these suits will be carried through. Furthermore, this is one of the platform pledges which the President can redeem by himself, without going to a Congress, which may be less zealous than he, for authorization.

Taxes are always of importance to business men. The platform opposes a federal sales tax, states that tax inequities should be removed, and favors reduction of taxes only when this can be done without unbalancing the nation's economy. The latter two are comfortably vague. The real question is: Will taxes rise? The key to the answer is found in another platform plank, which promises a balanced budget and a reduction of the public debt. If these can be achieved at present tax levels, a rise in taxes is generally regarded as unlikely.

Some light is thrown on this matter by a recent review of the 1949 budget. Here it is pointed out that tax reductions will reduce the federal government's income by 6 billion dollars from fiscal year 1948 to fiscal year 1949, while increased expenditures, principally for foreign aid and national defense, will increase expenditures by 5 billion dollars. Nevertheless, the government will take in 1.4 billion dollars more than it will spend in fiscal year 1949. This is in contrast with a 12.6 billion dollar excess of receipts over payments last year. The consequence will be that while last year it was possible to pay off more than 7.3 billion dollars of borrowed funds, no repetition of this performance is in sight. This boils down to the fact that present tax rates appear to be sufficient to balance the budget but they do not provide enough of a surplus to retire any debt. However, it is doubtful that taxes will be increased if the only purpose is to pay off the debt.

Finally, the platform makes many pledges with respect to labor. It calls for repeal of the Taft-Hartley Act, a minimum wage of at least 75 cents an hour, improved old-age pensions and unemployment insurance, health insurance, and other social benefits. For a more complete discussion of these measures, the reader is referred to the "Report on Current Labor Developments" found elsewhere in this issue. The next Congress is certain to give these measures serious consideration. Whether all or some will finally pass will depend in great part upon whether a sufficient number of the conservative Southern Democrats can be convinced, cajoled, or compelled (perhaps, by the device of withholding patronage) to go along with the President's program.

With it all, no radical changes are expected. The country is prosperous and no administration in its right mind would purposely "rock the

(*Continued on page* 64)

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NEW RAW GRINDING MILLS AT DIXON

another ON THE SPOT report

UNDOUBTEDLY the last word in the raw grinding of kiln feed for the production of portland cement is an installation recently completed by Babcock & Wilcox at the Dixon, Illinois, plant of Medusa Portland Cement Co. Incorporating to the fullest possible extent all the experience gained over a period of years with B & W Type "B" pulverizers in cement mills, the Dixon installation very probably represents an important step forward in the science of closed-circuit raw grinding. Its outstanding feature is unquestionably the achievement of very low power consumption per ton, but other benefits promise to accrue in respect to working conditions, maintenance costs, kiln performance and quality.

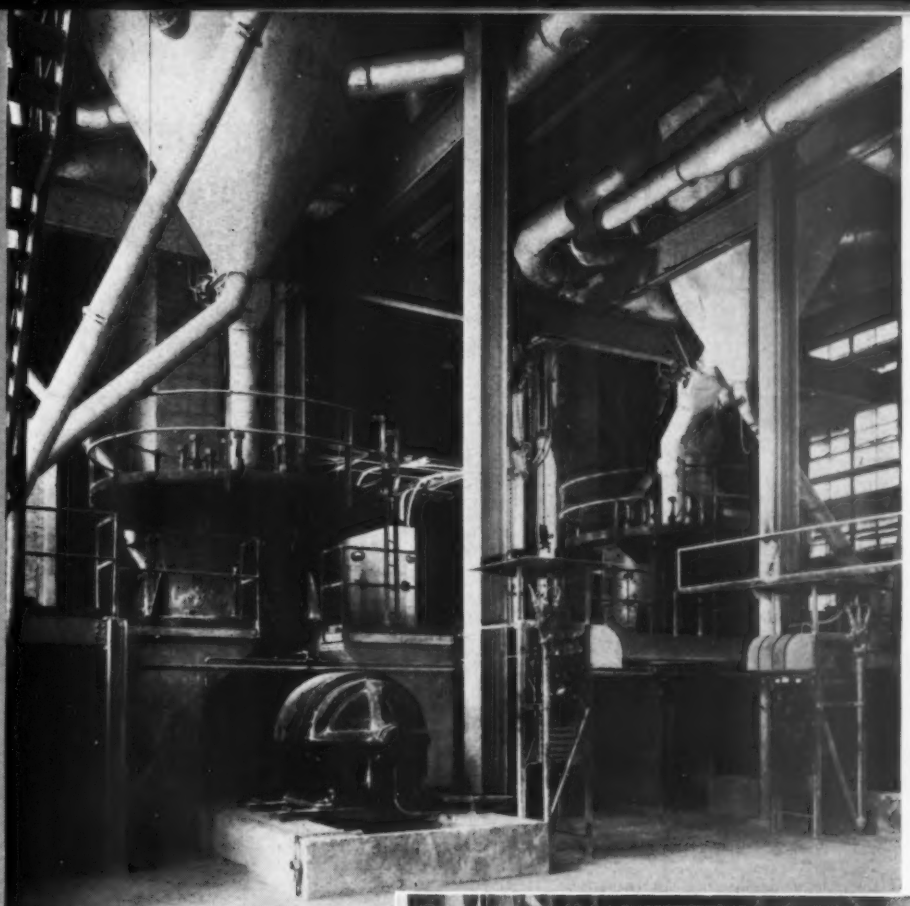
In an 8-hr. test carried out at the plant several weeks ago, the output of the new mills comfortably exceeded the designers' prediction of 38.9 tons per hour at 92 percent through 200-mesh. The material produced during the run actually averaged 38.5 tons per hour at 94.5 percent through 200, or about 42.5 tons on the basis of 92 percent passing 200. This was accomplished with a circulating load of around 290 tons, or a little more than 6 to 1. The tube mills formerly operated at Dixon reduced the stone to around 88 percent through 200, and only 94 percent through 100, as compared with over 99 percent with the new mills. The new facilities will handle materials containing up to 5 percent moisture, which is thought to represent a new high for the industry. On the test run the incoming feed actually averaged between 3½ and 4 percent moisture.

By WILLIAM M. AVERY

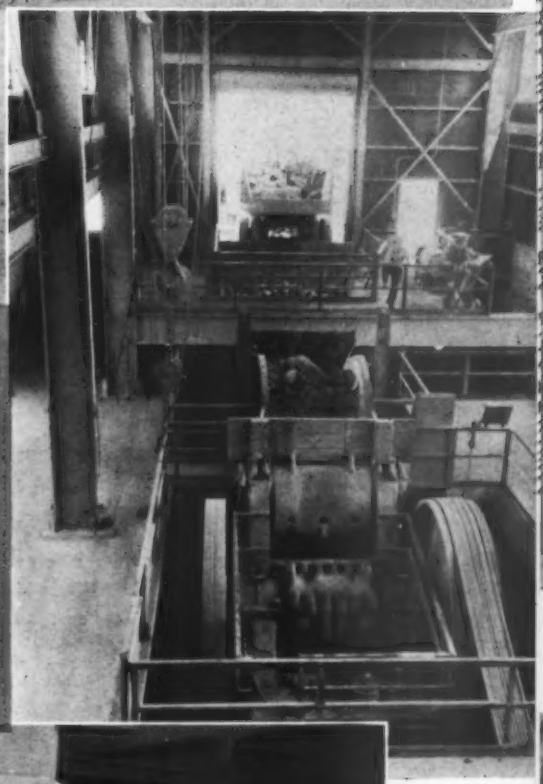
Closed-circuit grinding system does a better job at lower cost.

Power consumption during the 8-hr. test was at the rate of 11.8 kw.-h. per ton of material for the entire raw grinding system, as contrasted with tube mill performance of 18 to 20 kw.-h. per ton. Total installed horsepower in the new system is about 500 less than in the old. This represents a decrease of about 30 percent for the same output.

In the new layout of the mill the raw grinding department was located north of the kilns, and adjoining a new 77- by 340-ft. building for raw material storage. This is in turn adjoined to the north by a new crusher building in which the existing primary crusher, a 48- by 60-in. Traylor jaw, and a 60-in. Allis-Chalmers apron feeder, were relocated. Stone and shale are hauled from the quarry with 10-ton White end-dump trucks.



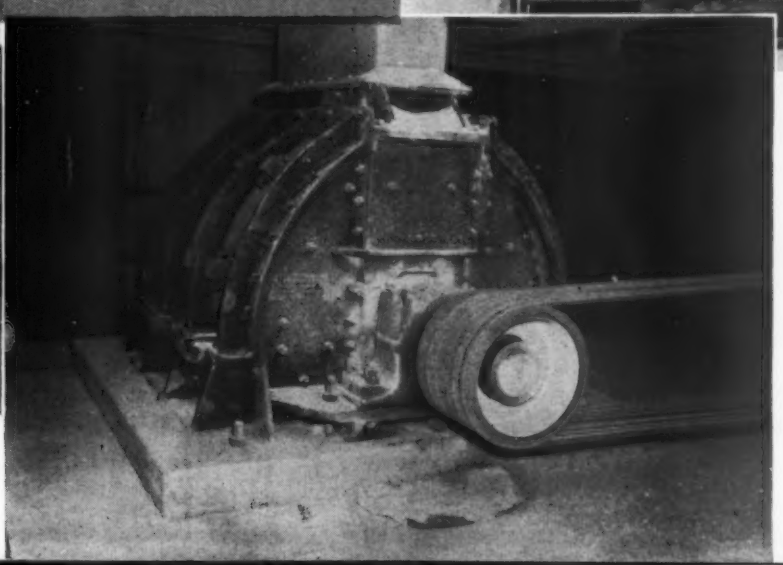
• Right: The new mills stand side by side in the raw grind department. Each is separately fed and served by its own furnace, air separator and other appurtenant equipment.



• Below: A general view of the new crusher and storage buildings at the Dixon, Ill., plant of Medusa Portland Cement Co. New grinding facilities have been installed in a separate building beyond and adjoining the storage structure.

• Right: View in the crusher building showing the 60-in. apron feeder and the 48- by 60-in. jaw crusher.

• Below: The impact crusher which reduces the feed to minus ¾-in.



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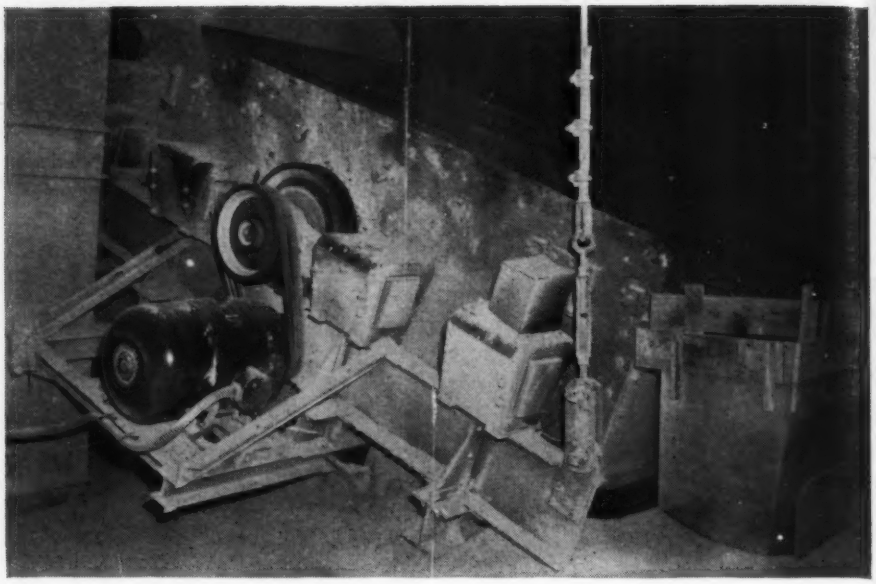


• The secondary crusher is in closed circuit with this 6- by 12-ft. vibrating screen.

• Left: The inclined super-capacity elevator which feeds material from the primary to the secondary crusher.

The primary crusher discharges onto a 48-in. apron feeder which in turn discharges onto an inclined super-capacity Jeffrey elevator. Secondary crushing is accomplished with a Pennsylvania Impactor which is in closed circuit with a 6- by 12-ft. Ty-Rock screen located at the top of the plant. Minus ¾-in. stone drops into a chute which discharges inside the storage building, while the coarse material (about 10 percent of the feed) is returned to the Impactor.

Both clay and shale are used to regulate the mix. At present this is being done by adding a fixed amount of shale (one small truckload to five truckloads of stone) at the primary crusher, and obtaining fine adjustment by adding clay just ahead of the mills. The clay is dried to some extent in a 6- by 85-ft. Vulcan stoker-fired rotary dryer, and then is conveyed to the extreme east end of the storage building.

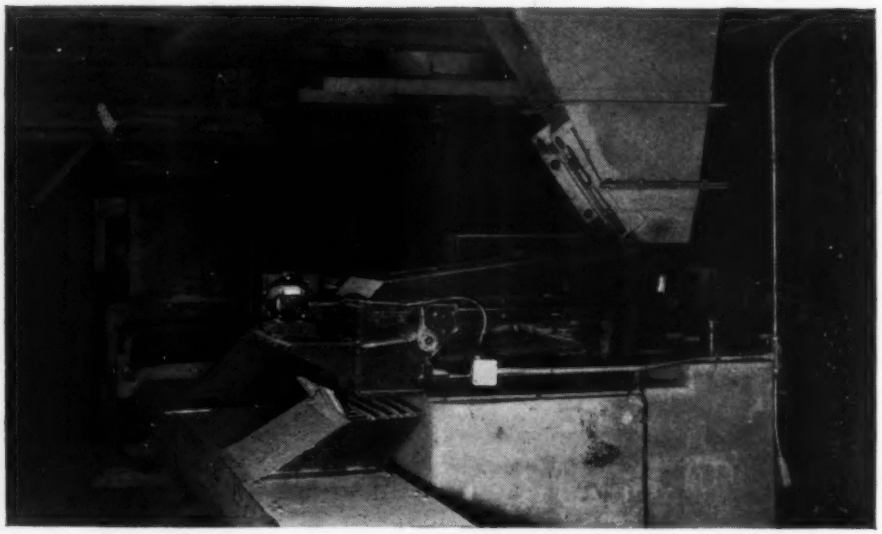
This single rotary dryer in the new layout compares with four in the old system (two for stone and two for clay), the reduction being accounted for by the fact that the stone is now dried right in the mill circuit.

Stone, clay and shale are mixed and blended in the storage building with an 8-ton P & H overhead crane. Concrete bins located near the middle of one side of the storage area provide for feeding each of these materials in the required proportions to the two grinding circuits. It should be noted, however, that the shale is at present introduced at the primary crusher. Each group of bins has a capacity of 280 tons, or enough to carry the mills for one shift, with 21,000 tons storage ahead of these bins.

In each circuit stone and shale (minus ¾-in.) drop from the bins onto a 24-in. Jeffrey apron feeder, which has a variable speed drive so that the load on the mill can be regulated. The feeder discharges into a 16-in. screw conveyor, which also receives clay discharged from a Jeffrey Way-Trol constant weight feeder. It is proposed eventually to install a small crusher and a separate feeder at this location to introduce shale into the mix.

From the screw conveyor the feed goes into a Link-Belt elevator and is discharged into a 16-ft. Sturtevant air separator, in which the material is dried with heat from a coal-fired furnace. Iron Fireman stokers are used for firing the furnaces (one for each circuit), as well as for the rotary clay dryer. Fine material from the separator goes to a 120-cu. ft. Robinson air-activated conveyor which feeds the blending bins, while the tailings go to the mill.

The mill in each of the two identical circuits is a B & W Type "B", Size 366, Class 101 M pulverizer. The unit is center fed, and the pulverizing is done in three stages with ten 12¼-in. forged steel balls in the first, twenty-one 9¼-in. balls in the second, and twenty-three 9¼-in. balls in the third. A Norblo fan on the Northern Blower dust collector in each circuit supplies the mill with approximately 60,000 c.f.m. of air. Mill drives are 2,300-volt, 500-hp. Allis-Chalmers synchronous motors. The entire mill discharge is re-elevated and passed through the separator to close the circuit. Under normal conditions the circulating load is somewhere betwen 500 and 600 per-



• Clay enters each feed circuit from a constant-weight feeder and is mixed with stone and shale in the screw conveyor.

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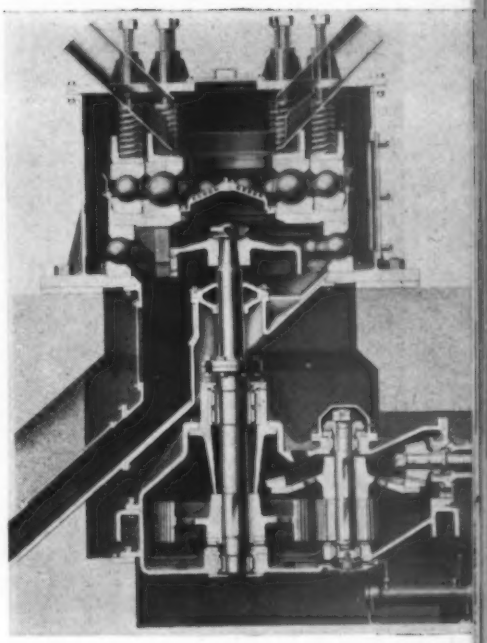
cent, which has been found to be close to the maximum for efficient operation.

The system is controlled manually to hold the temperature at the dust collectors around 150 deg. F. Any one of four limit thermostats in the system may stop the operation of the furnace stoker. This safeguard prevents burning up the bags in the dust collector, and at the same time maintains somewhere near the optimum temperature for drying the materials. Other protective features include a very complete arrangement of electrical interlocks throughout the system, and a solenoid-operated tailings valve to keep tailings in the separator in the event of trouble. Since there are many horizontal runs of pipe in the system, all piping has been thoroughly insulated to prevent condensation, which might cause plug ups.

At the guaranteed output rate of 38.9 t.p.h., each mill in the new setup can grind sufficient feed for 4 kilns, or roughly 2,800 bbls. per day. Since there are 6 kilns in the plant, there will be only occasional need for operating both mills simultaneously. The Dixon plant generates its own 25-cycle power, and there will be some advantage to being able to select, from the standpoint of power demand, the most convenient times to operate both raw grinding circuits.

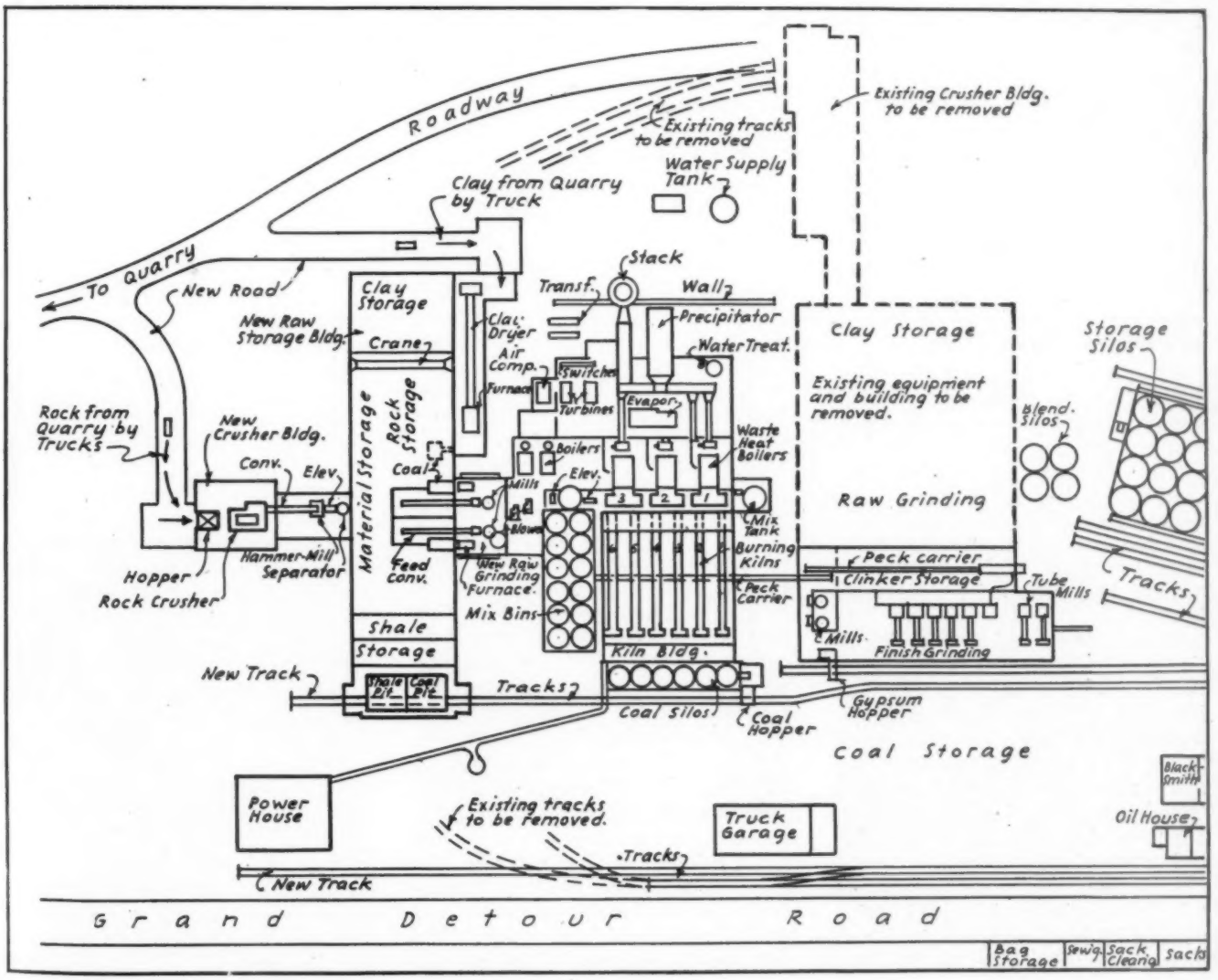
In order to utilize to the fullest extent the advantages of the new raw grinding facilities, the company installed at the same time an entirely new kiln-feed system. This includes a battery of 12 blending tanks, each 16 ft. in diameter by 52 ft. in height, with a total capacity of 12,000 bbls. The raw mix is drawn from the bottom of the bins into two 16-in. screw conveyors, elevated and discharged into a 16-ft. diameter by 26-ft. high mix tank, where the boiler flue dust from two kilns is added.

The mix is drawn from the bottom of this tank (designated as "A" mix tank) with four rotary feeders, elevated and discharged into a 16-in. screw conveyor running across and above to the feed ends of all six kilns. Nine-inch-diameter lateral screws do the actual feeding. Excess feed, amounting to about 20 percent



• Sectional view of one of the new center-fed mills, in which pulverizing is done in three stages.

• Layout showing location and arrangement of the new raw grinding setup.



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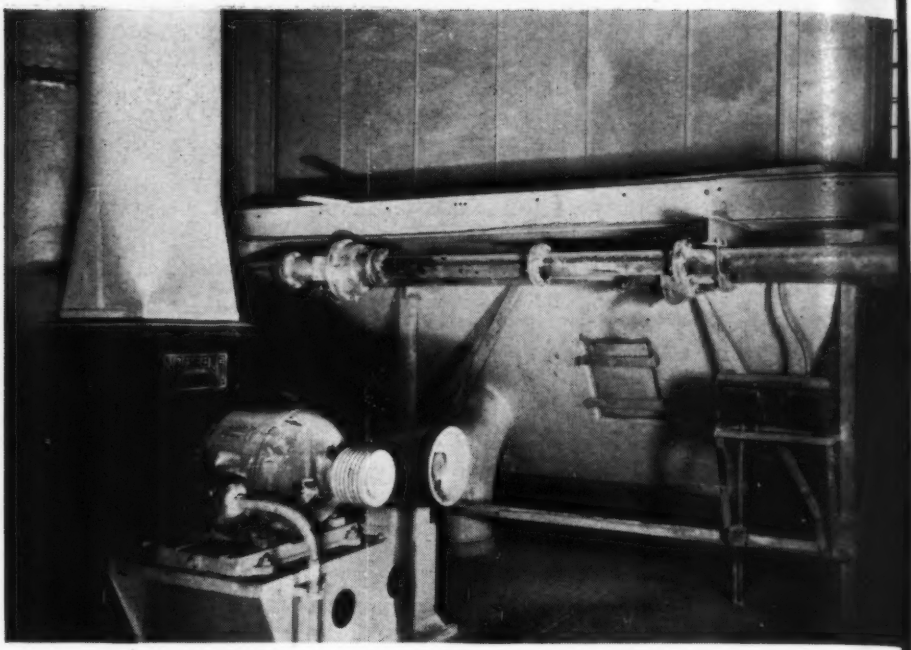

• Fines from each air separator are collected in a 120-cu. ft. capacity air-activated conveyor which boosts the material into the blending bins.

• Right: Each mill is supplied with approximately 60,000 c.f.m. of air by the fan on the dust collector in its circuit.

of the total actually required, drops into "B" mix tank located beyond the kilns. Three rotary feeders and an elevator return this material to another 16-in.-diameter screw from which a portion of the kiln feed is also drawn. Flue dust from four of the kilns is added at this tank. Normally feed enters the kiln from both screw conveyors. High and low Bindicators on the two mix tanks automatically hold the levels between 5 and 10 ft. by cutting the rotary feeders on or off as required.

New Bigelow-Liptak waste flues have also been installed to replace the reinforced-concrete flues formerly in use. This change is expected to reduce maintenance work considerably. Dust from the flues drops into a screw conveyor and is introduced continuously into the kiln feed system.

Although the construction and installation work just completed at Dixon was carried out over a period of almost two years, the actual change-over required a shut-down of only two weeks' duration. The first feed went into the B & W mills on July 2nd of this year, and less than two weeks later the old tube mill raw-grinding circuit was shut down permanently.

Most of the design work in connection with raw grinding and clay drying was carried out by engineers of the Babcock & Wilcox Co. J. Gordon Turnbull, Inc., of Cleveland acted as consulting engineers, and the general contractor for the work was Hunkin-Conkey of Cleveland. All design and construction work was done under the supervision of the Medusa engineering department, W. B. Harlow, chief engineer, and under the direction of W. J. Worthy, general superintendent of operations for Medusa. L. E. Smith is superintendent of the Dixon mill and C. B. Fowler is plant chemist.

Washington News Letter

(*From page* 59)

boat." But the fact that the Democrats have won a resounding victory will not automatically eliminate the internal problems of an administration which has so frequently evidenced lack of direction and co-ordination, nor will it solve the fundamental economic problem of how to achieve both prosperity and stability.

Overshadowing all of these domestic problems is the ever-present threat of war. If war comes, or even if only a new state of emergency is declared, the domestic economy will promptly be subordinated to the more urgent problem of survival. What's ahead for business men under these circumstances is beginning to become clear.

While still under wraps, the details of an industrial mobilization plan which has been worked on for a long time, principally by the National Security Resources Board, are trickling out. This plan will be incorporated in proposals for some kind of standby legislation to be put on the books so that it can be available for immediate use should the emergency occur.

Although this unpleasant subject was avoided by both party platforms, it may turn out to be the most important and controversial piece of legislation to be considered by the next Congress. From present indications, the mobilization plan includes the most widespread and rigid controls over the domestic economy ever attempted. Its features are certain to be unpopular; and in some cases it will be opposed by the persons most affected by them. Business men are unlikely to be pleased by its rigid materials controls which, in effect, will determine what manufacturers will be able to make and what retailers will have to sell. They will also be unhappy about the reimposition of price controls and sharply limiting excess profits taxes.

Labor will be equally unhappy about a proposed wage freeze, the outlawing of practically all strikes, and the allocation of labor to most essential uses. The general public is certain to chafe again under the proposed rationing of not only food but also of clothing, gasoline and, perhaps, housing. From what is already known about the new mobilization plan, it appears that the controls of World War II will be duplicated, expanded, and made more rigid.

The use of cement in Brazil has tripled since 1926, according to data published by the American Chamber of Commerce in Sao Paulo. In 1926 the amount consumed was 409,704 metric tons, while in 1947 the figure was 1,227,134 tons. Of the 1926 consumption, 96 percent was imported; in 1947 72.4 percent was made in Brazil.

Safety, Fuel Problems, Packaging Discussed at Chicago N.L.A. Meet

another ON THE SPOT report

THE Operating Division of the National Lime Assn. added another to its growing list of successful meetings at the Palmer House, Chicago, November 4 to 6, 1948. The papers presented and the subjects discussed were timely and important and the open forum discussions were actively participated in by a majority of those present. The attendance was excellent, considering that this meeting was well west of the areas in which most of the member companies' plants are located. The attendance consisted not only of the top men in these various companies but included also many plant superintendents and others directly responsible for operations. Four Canadian companies were among those represented.

Those in charge of the program are to be congratulated on their choice of subjects, which were selected as the result of a questionnaire sent out to the membership, but even more on their choice of speakers, each of whom was a leading authority on his subject. Among these subjects were: safety in the handling of materials, efficient coal burning, advances in packaging methods, etc. The lime plant problem questionnare session covered a wide variety of subjects and brought forth much valuable and interesting information. In addition to the members invited representatives of equipment manufacturers participated in the discussions.

A feature of this meeting which was participated in by all was an inspection trip through the South Chicago plant of the Marblehead Lime Co. This modern rotary-kiln plant is notable for its complete system of controls, and it also has one of the first installations east of the Rockies of the Ellernan calciner.

Safe Handling of Materials Over the past ten-year period, the lime industry has shown no improvement in accident frequency, said Lea P. Warner, Jr., engineer for the Warner Co., Philadelphia, Pa, Furthermore, he went on, 25 percent of all accidents are the direct result of bad or archaic materials-handling practices.

In his paper entitled, *How Do You Handle Materials?*, Mr. Warner covered the subject of safety and its relation to materials handling. The importance of safe and efficient materials-handling methods is of particular significance to the lime industry, since nearly 90 percent of the industry's economic effort is directly concerned with the movement of materials.

Hand loading of stone is costly because it is an awkward materials-handling procedure and because it is the direct cause of many personal injuries. Since the mechanization of quarries, injuries in this category have been substantially reduced. In other words, accident prevention has been made an integral part of production. Remember, Mr. Warner cautioned, accidents cost industry in excess of $7 billion a year.

Today most workers have at least a high school education. Our schools have trained these men to think. It is therefore most important today to replace rule-of-thumb methods of operations with sound engineering procedures calculated to eliminate wasted effort. By showing your workers the "whys" and "hows" of his job, you'll have simultaneously encouraged more efficient plant operations and happier employee relations.

Before you hire a new man, concluded Mr. Warner, analyze that particular job, breaking it down into key points. Then go out and get someone whose qualifications meet those of the job. Sensible hiring procedures can only result in lower accident frequency, better employee relations with less labor turnover, and a more efficient operating organization.

1000-Day Club The Thousand-Day Club, sponsored by the N.L.A. in cooperation with the U. S. Bureau of Mines, provides that any lime plant which has completed 1,000 days or more of accident-free operation shall be entitled to receive an appropriate certificate of membership in this safety club. This year, a 1,000-Day Club certificate was awarded to the Thomasville, Pennsylvania, plant of The J. E. Baker Co. John A. Sechrist superintendent of the Thomasville plant, was on hand to receive the certificate, which was presented by William T. Harvey, Jr. engineer for the association.

During the presentation, Mr. Sechrist outlined his company's safety

Wallace E. Wing, president of the Marblehead Lime Co., talks things over with a member hailing from the Lone Star State, John P. Sheehan, Atlas Lime Co., El Paso.

Still smiling on the last day of the operating meeting are Gladys McBee and two other N.L.A. staff members—left: W. T. Harvey Jr., association engineer; right: Robert S. Boynton, general manager of the association.

Two representatives from the Warner Co.: A. C. Hewitt (left), Bellefonte, Pa., and Irving Warner (right), Philadelphia, Pa.

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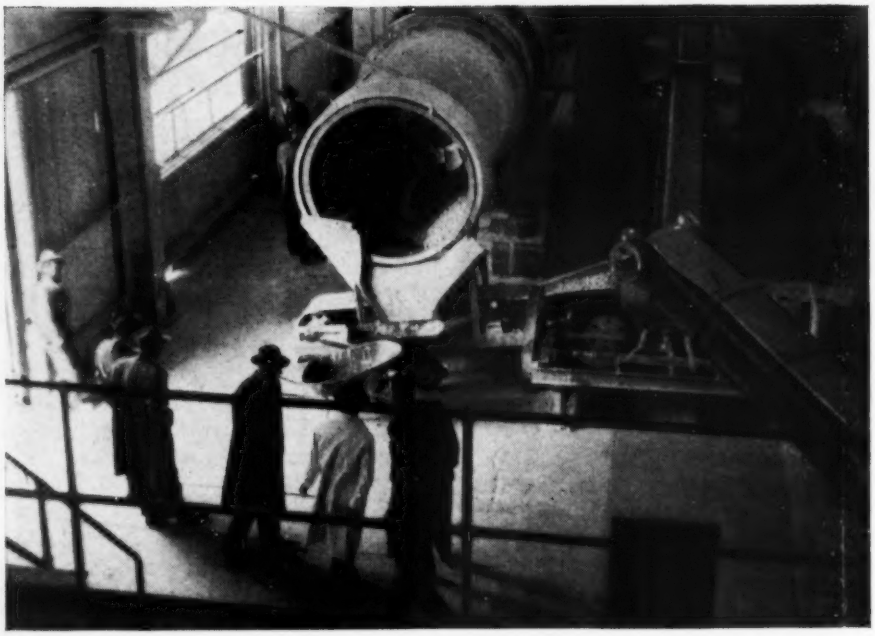


This shot was taken on the field trip to the South Chicago plant of the Marblehead Lime Co. Note the absence of dust and the general good housekeeping of the plant.

program which has permitted it to operate 1,965 days, or 425,000 man hours, without a lost-time accident. At the Thomasville plant every employee, from the superintendent on down, is safety conscious and is kept that way by informal safety meetings, held every month. Attendance at these meetings is compulsory. At the monthly meetings two men are elected to serve as safety inspectors and for a period of 30 days these two individuals are responsible for reporting all and any safety violations.

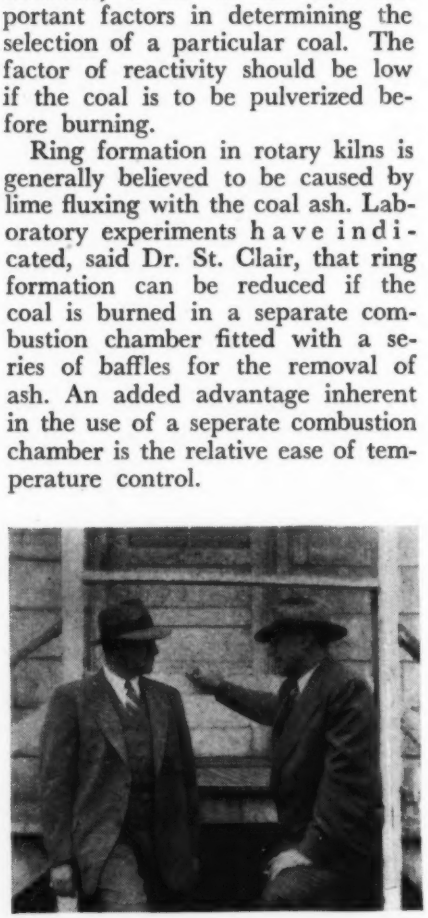
In addition each new employee is thoroughly indoctrinated with the company's safety program. Before he can go to work, he must sign a pledge that he'll obey all the safety rules. Upon three inexcusable violations of the safety regulations, the employee is summarily dismissed.

Coal Session *How to Get the Most Out of Coal* was the title of the paper presented by Dr. Houston St. Clair, combustion engineer for the Jewel Ridge and Virginia Smokeless Coal Co., Tazewell, Va. Dr. St. Clair discussed the selection of coal, the use of coal, and ring formation in rotary kilns.

The basic factor in the choice of coal is determined by the million B. t. u. delivered per dollar. Also influencing the selection of coal are the proximate analyses, which include: 1) moisture content; 2) sulphur content; 3) ash content, and 4) volatile content or percent of hydrocarbons. For pulverization purposes, however, the volatile content is relatively unimportant.

Reactivity of coal is nominally the measure of the temperature at which coal reacts with oxygen. This factor, although difficult to ascertain, is one of the most important factors in determining the selection of a particular coal. The factor of reactivity should be low if the coal is to be pulverized before burning.

Ring formation in rotary kilns is generally believed to be caused by lime fluxing with the coal ash. Laboratory experiments have indicated, said Dr. St. Clair, that ring formation can be reduced if the coal is burned in a separate combustion chamber fitted with a series of baffles for the removal of ash. An added advantage inherent in the use of a seperate combustion chamber is the relative ease of temperature control.



Time out during the field trip to Marblehead Lime Co. H. M. Beatty, Kelley Island Lime & Transport Co., compares notes with J. H. Robinson, Gypsum, Lime & Alabastine, Canada, Ltd., Toronto, Ontario.

Packaging Slide films, accompanied by oral comments on the bagging, packaging, and car loading operations of their respective companies were shown by Irving Warner, Warner Co., Philadelphia, Pa.; W. W. Sprague, National Mortar & Supply Co., Pittsburgh, Pa.; and R. C. Mallery, National Gypsum So., Luckey, O. John H. Deacon, St. Regis Sales Corp., also showed a few slides on mechanical car loading devices.

Field Trip All members and guests of the N.L.A. Operating Division were invited to inspect the South Chicago plant of the Marblehead Lime Company. Largely due to the organization and planning of Wallace E. Wing, president of Marblehead, this field trip was one of the best which PIT AND QUARRY's editors have attended. This also included a perch luncheon at Phil Smidt's.

Of particular interest to operators were the battery of Buell dust collectors and the two new Ellernan calciners which were recently installed at the South Chicago plant.

Lime Plant Problem Questionnaire Perhaps the most interesting session was the one at which those problems were discussed which had been voted the most important ones on a questionnaire sent to all members. The questionnaire listed subjects suggested by the members. This method of selection was a huge success, judging from the interest shown by those present and the animated discussion of each subject. In the absence of Russell Rarey this meeting was presided over by Fred D. Witmer Jr. (Ohio Hydrate & Supply Co.), and the discussion was led by William J. Ash (New England Lime Co.). A feature of this session was a monograph by Irving Warner (Warner Co.) on the instrumentation of rotary lime kilns. This was very interesting but too long to cover in this report.

Natural Gas The burning of natural gas in rotary kilns was one of the most controversial subjects. One producer said that pulverized coal gave 13 percent greater output from a kiln than did gas, and with a lower B. t. u. consumption. The lime produced was slower slaking but cleaner, due to the absence of an ash ring in the kiln. The best results with gas were obtained by using with it enough pulverized coal to give a luminous flame.

(*Continued on page* 72)

PUMPING Makes Possible Year-Round Operations

By WALTER E. TRAUFFER

General view of plant, with pumphouse at left and sand drag and stock pile at right.

Lloyd S. Brannan, president, and John McCullough, asst. gen. manager.

Largest Denver Area Producer Builds Sand and Gravel Plant Of Unusually Compact Design

another ON THE SPOT report

FOR many years the Brannan Sand & Gravel Co. has been the largest producer of aggregates in the Denver area. Its policy has been one of gradual expansion to meet demands. In recent years, however, this area has grown so rapidly, industrially and otherwise, that drastic measures had to be taken to meet this demand. Construction was therefore begun late in 1947 on a new and modern 250-t.p.h. sand and gravel plant which went into operation in 1948. This supplements four older plants with a combined capacity of 3,000 tons daily, and replaces a fifth old plant of 125-t.p.h. capacity, which will be rebuilt and enlarged to further increase the company's productive capacity.

These five operating plants are located south, east and north of downtown Denver, three in the city limits, and two just outside. They are within easy delivery distance of the areas where demand is greatest. These plants all have river bed deposits on the Platte River, Clear Creek and Cherry Creek.

The new plant is a model of compact and efficient design, requiring a minimum of equipment and handling in the production of a large volume of accurately-sized, high quality sand and gravel. This compactness and efficiency is partly due to the fact that, as in the company's other plants, only a small amount of bin storage is provided. Credit must also be given to the experienced operating men, from the top down, who designed, built, and operate this plant. Lloyd

Above: 1¼-cu.-yd. diesel shovel loading 8-cu.-yd. truck in pit.

Below: Feeder, right, discharging on scalping screen ahead of jaw crusher.

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S. Brannan, president and general manager, John M. McCullough, assistant general manager, Jim Johnson, general superintendent, and Earl Graham, plant superintendent, each give credit to the others, and the rest of the plant personnel, for this operation.

The deposit of 35 acres is located on Clear Creek and Federal Blvd., the main highway out of Denver to Boulder and other points north. The overburden varies from 1 to 3 ft. in depth and is removed periodically with a dragline. The deposit averages 22 ft. in depth, with the ground water level about 1½ ft. below the surface. It averages about 45 percent sand, and the maximum gravel size is about 8 in. As dry recovery was desired so that the plant could be operated the year around, with temperatures as low as 20 deg. below zero in winter, constant pumping was necessary. The pit is now being developed with a single entry, and a Chain Belt Rex 4-in. pump is used to keep it dry. As soon as possible another exit will be provided, so that one-way traffic can be established. Still later the trucks will discharge to a pit hopper with a long belt conveyor to the plant.

A 1¼-cu. yd. Bay City shovel with a Cummins diesel engine loads the material into three trucks, an 8-cu. yd. Sterling and two 6-cu. yd. Hugs. These haul the material a distance of about 500 ft. to the one-way ramp at the plant.

Tractor, with bulldozer, which stockpiles sand from the drag at the left.

Another view of the plant, minus winter enclosure, showing trucks bringing in raw material (left) and hauling away finished product (right).

The trucks dump their load over an 8-in. rail grizzly into a 15-cu. yd. steel hopper. Under this is a 3- by 7-ft. Telsmith reciprocating feeder, and a stream of water at the discharge end of this wets the material when necessary for efficient screening. The material drops on a 4- by 3-ft. Screen Equipment Co. Seco 1-deck screen equipped with Standard perforated plate with .2-in round openings. The material passing through the screen drops direct into a concrete-lined sump, passing the primary crusher. The oversize goes into the 10- by 40-in. Austin-Western jaw crusher which reduces it to minus 2-in. This material drops into the same sump.

A 24-in. by 60-ft. Chain Belt Co. belt-bucket elevator with Manhattan belt digs the material out of the sump under water and discharges it onto the Seco 4- by 16-ft., 3-deck vibrating screen. Both the elevators used have water-lubricated wood bearings on their tail pulleys. This screen has 1½-in. wire cloth on the top deck and ¾-in. on the middle deck; the bottom deck has ¼-in. cloth on the first three sections and ½-in. on the last section. This screen makes four sizes—1½-in., ¾-in., ⅜-in. and No. 4. The three gravel sizes are discharged into separate compartments of the 4-compartment, 300-ton Blaw Knox steel bin.

The plus 1½-in. gravel over the top deck of this screen, usually about 25 percent of the plant input, drops on an 18-in. by 18-ft. horizontal transverse belt conveyor. This serves both sizing screens and, with the screen chutes, is mounted on a steel frame with wheels on rails so that it can be pulled back out of the way when the screen cloth is being changed. This in turn discharges it on an 18-in. by 42-ft. conveyor which extends at right angles and at a slight downward slope to the secondary crusher, which is located alongside the primary crusher.

This is a 24- by 40-in. Iowa Manufacturing Co. Cedarapids 2-roll crusher with one corrugated and one smooth roll. The minus ¾-in. product of this crusher is carried on an 18-in. by 60-ft. belt bucket elevator, of Chain Belt and Manhattan manufacture, to a second 4- by 16-ft. Seco 3-deck screen. The top deck of this screen has 1½-in. wire cloth to get rid of flats and foreign matter

which are discharged on the same 18-in. transverse belt for return to the roll crusher. The second deck is equipped with ¾-in. cloth and the bottom deck with No. 4 and ⅝-in. This screen also makes four sizes—1½-in., ¾-in., ⅝-in., and No. 4. The two large sizes go into two bin compartments with the same sizes from the first screen. The ⅝-in. material goes into the fourth compartment.

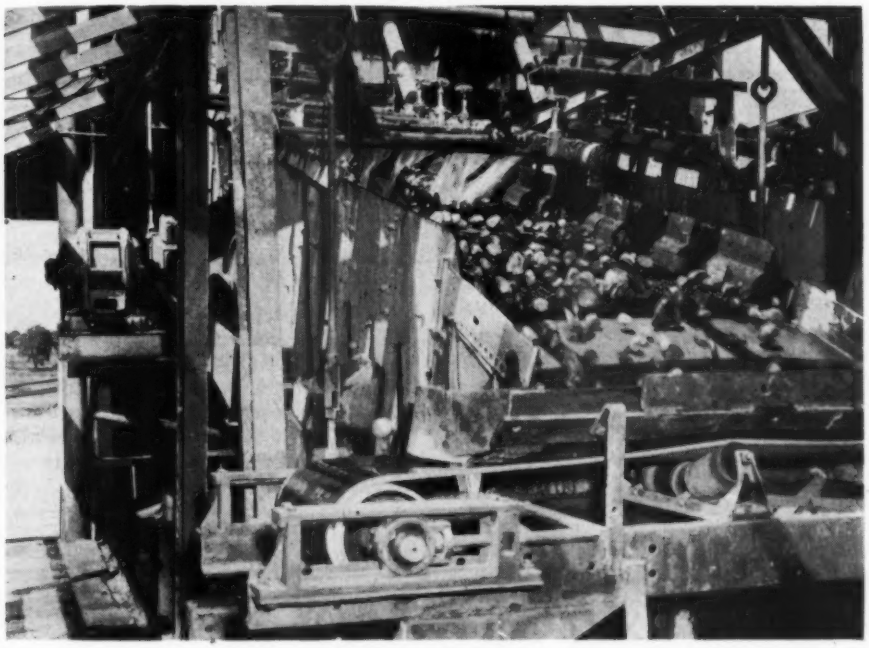
Both screens are equipped with perforated spray pipes on their top decks. The unusual length of the first screen is necessary because of the number of sizes made on it and because of the clay content which calls for extra washing and screening. The extra length of the second screen is needed for the same reasons and because the finer material fed to it requires more area for efficient screening.

The sand from both screens flows with the wash water to a 6- by 60-ft. sluice which is split in the center. The bottom of this sluice is lined with burlap, corduroy and metal lath which act as riffles to collect the gold. Each night the fine flour gold is collected; its value is considerably over the cost of collecting it.

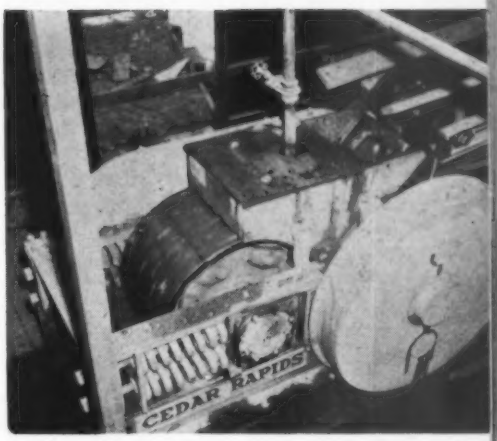
The sand flows from the sluice into a 36-in. by 30-ft. sand drag with rubber belt and angle-iron buckets. The water overflows into a waste pile from which it is pushed to a stockpile by a Caterpillar D4 tractor with a Trackson bulldozer. This tractor can be equipped with a bucket for reloading into trucks when this is necessary. Most of the truck loading is done by a ⅜-cu. yd. Bucyrus-Erie gasoline shovel and a new Barber-Greene pneumatic-tired bucket loader.

The intention is to build up a 30,000-ton gravel stockpile and a large sand stockpile over a truck-loading tunnel. A Sauerman 2-cu. yd. Crescent scraper system with an 80-ft. mast will be used to handle the sand to and from storage. The gravel stockpiling is now being done with a third Hug truck which will be replaced by a 6-cu. yd. Koehring Dumptor now on order.

The plant is of sturdy wood-frame construction with concrete foundations and footings and Kaiser corrugated aluminum roofing and siding. Plant workers say that the aluminum does not heat up in summer the way other metals do, probably partly because it better reflects the sun's rays. It should also make the plant easier to heat in the winter.



The two 4- by 16-in. 3-deck screens which do all the sizing. Washing sprays and a part of the conveyor to the reduction crusher are shown.



The 24- by 40-in. 2-roll crusher, with the downhill conveyor from the screens at the left.

Very little metal is exposed to wear in this plant. The chutes and bins are dead-bedded to make the gravel flow on itself. At the chutes from the elevators to the screens, for example, only about 1 ft. of metal is exposed to wear.

The conveyor and elevator frames, head and tail pulleys, chutes, etc., were built in the company's shop. All bearings are anti-friction, both Fafnir and Shafer bearings being used. The Iowa Mfg. Co. supplied the conveyor idlers and Ludlow-Saylor and Roebling screen cloth is used. Texaco oils and greases are used throughout. Marfak No. 1 is used mostly with Regal Starfax No. 2 for all high-speed bearings.

All equipment is controlled by

Another view of the two screens, showing the transversal belt which can be rolled away with screens when changing screen cloth.

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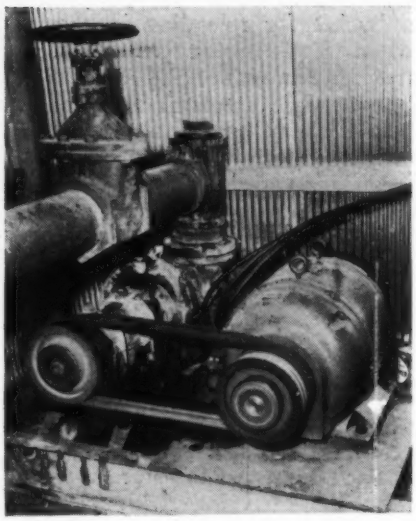
one man from a main control room at the top of the plant from which all but a few units can be seen. Individual push-button switches near each machine and automatic sequence starting and stopping insure against mishaps. Most of the switchgear is Westinghouse, and Roebling electric cable is used. A 300-kv. a. transformer reduces the 2300-v. current to 200-v. for all plant uses.

With one exception, all the electric motors are General Electric and most of the drives are Gates V-belts with Browning pulleys. The 12 motors used total 445 hp.

The plant water supply system is worthy of mention. The water comes from a pond. A 5-in. Byron-Jackson pump supplies 800 g.p.m. at 150-ft. total head with a pressure of 20 lb. at the screens. All overflow from the elevator sumps goes to the pond for re-use.

The J. W. Brannan Sand & Gravel Co. was founded in 1912 and at first produced only pit-run material. Its first plant, a dry-screening operation, was built in 1918 and had a capacity of 50 cu. yd. daily. The first washing plant, on Clear Creek, was built in 1923. Since then new plants have been added and old plants rebuilt and enlarged to keep up with the growing demand.



The 6-in. water pump which supplies 800 g.p.m. against 150 ft. total head.

In 1939 the firm name was changed to Spratlan-Brannan, Inc. and a ready-mixed concrete plant was built. This part of the business expanded rapidly and in 1943 F. T. Spratlen Jr. left the company, taking over the ready-mix operations which he now operates as the Ready-Mixed Concrete Co. The firm name was then changed to the Brannan Sand & Gravel Co. In 1946 the company went into the aggregate-bituminizing business with a Barber-Greene plant. No street or highway work is done, all sales being made for such uses as parking lots, driveways, etc.

The company operates a fleet of about 40 delivery trucks from its plants and yard. Most of these are 5- or 6-cu. yd. capacity. At rush seasons about 30 more trucks are hired. The company-owned trucks are stored at the company's main yard at 4800 Brighton Blvd., where there is also a repair and maintenance garage. At still another location the company has a warehouse for cement, lime, plaster, etc. A truck scale is being installed at the new plant.

1947 Abrasives Production Shows Substantial Increase

Owing to the high level of construction and industrial production in 1947 the demand for most abrasive materials increased substantially. New sales records were established for ground sand and sandstone, pumice and pumicite, and metallic abrasives, according to reports of producers to the U. S. Bureau of Mines. The demand for pumice and pumicite for use in aggregate as a construction material in Western states was especially noteworthy, as was the increased output of steel shot and grit (metallic abrasives).

Sales of ground sand and sandstone in 1947 increased 13 percent to 651,120 tons, valued at $5,181,113. Pumice and pumicite sold or used, principally for use in aggregate or for abrasive purposes, jumped 36 percent. Sales of diatomite and quartz indicated active markets. Tonnage of tripoli marketed in 1947 was the largest since 1937, and the value the highest yet recorded. Sales of garnet in 1947 totaled 8,722 short tons, nearly reaching the record level of 1923 (9,006 tons), while sales of grinding pebbles increased 26 percent over 1946. Marketed output of emery, grindstones, and tube-mill liners was less in 1947 than in 1946.

With respect to artificial abrasives, production of silicon carbide remained virtually at the same level as in 1946. Output of aluminum oxide, however, rose sharply to slightly over 160,000 short tons, and for the first time, shipments of metallic abrasives surpassed 150,000 tons.

The value of imports for consumption in the United States of natural abrasive products declined 8 percent, as compared with 1946. The largest part of this decrease was due to an 11 percent drop in value of imports of diamond bort. As in 1946, this decline was accompanied by a smaller volume of carats. Imports of corundum ore and garnet also showed large decreases, as compared with 1946. Receipts of emery ore, however, were 21 percent greater than in 1946, those of "crude or unmanufactured" pumice were 43 percent higher and of "flint, flints, flintstones, unground," 64 percent higher. The value of total exports of all natural abrasive products increased 38 percent, as compared with 1946.

Britain Sends Mission to Make Bid for Canadian Business

British quarry plant engineers are making a big drive to increase Canadian business, on the basis of Canada's scarcity of American dollars, which currently limits Canadian buying from U. S. sources.

A British Engineering Trade Mission sailed on August 20 to study Canadian engineering production methods and needs and to attempt the promotion, in Canada, of British engineering equipment. The mission began its campaign in August at Montreal and visited Ottawa, Toronto, Sudbury, Fort William, Winnipeg, Regina, Calgary, Vancouver, Victoria, Edmonton, Quebec, Halifax and St. John. At each of these points meetings were organized with local engineering equipment buyers, with a view to presenting the British delivery, price and supply position. The requirements of the areas visited were also closely studied. A trade commissioner introduced the mission at each center, and British Board of Trade representatives accompanied it.

Canadian Sand-Gravel Output Gains by 42 Percent in 1947

The commercial production of sand and gravel in Canada during 1947 amounted to 56,789,569 tons, valued at $23,114,431, as compared with 49,949,994 tons, valued at $15,529,700 in 1946, an increase of 42 percent in tonnage and 49 percent in value. The totals included sand and gravel used by railroads as ballast, gravel used by mines as backfill, and recoveries of sand by dredges, as well as similar materials from other sources.

Ontario was the leading province, with a production of 20,230,499 tons. Quebec continued in second position, with 16,537,303 tons. Canadian sand and gravel plants screened or washed 7,330,996 tons in 1947, as compared with 6,152,580 tons in 1946. The quantity of bank or pit-run grades amounted to 49,458,573 tons, as compared with 33,797,573 tons in the preceding year.

Of the sand and gravel (mixed) output in 1947, 41,887,705 tons were used for roads, concrete, etc., and 3,418,072 tons of straight-run sand for building, concrete, etc.; 26,397 tons for moulding; 2,519 tons for core sand, and 43,653 tons for other purposes. The quantity of crushed gravel produced during the year was 5,356,229 tons. Other sand used as mine backfill in 1947 totalled 1,894,443 tons. Imports of sand and gravel amounted to 94,335 tons, valued at $85,216 in 1947; and exports totalled 376,536 tons, valued at $295,301.

According to *Safety Engineering* the year 1947 produced a total of 17,000 deaths and 2,000,000 injuries resulting from industrial accidents.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER

ALL of the labor developments of the last month have been dwarfed into relative insignificance by the biggest development of them all—the Democratic victory at the polls. This is all the more important because labor has claimed and has generally been given credit for the most substantial contribution to that victory. Not only were the unions the greatest financial contributors but they also provided the task forces which took over from a demoralized Democratic party the job of getting out the vote. History may yet record 1948 as the year when the Democratic party became the American counterpart of the British Labor Party.

It takes only a reading of the Democratic platform to predict confidently that early in the next session of Congress a bill will be introduced to increase the minimum wage to at least 75 cents an hour and perhaps to extend the coverage of the wage and hour law to many thousands of workers not now covered. There will be another bill to increase the benefits under the old-age and survivors insurance program and perhaps to extend the coverage of that program also. Some Republican support may be expected for these measures because of the endorsement of extended social security by Governor Dewey and Congressman Martin during the recent campaign. Bills are also likely to be introduced to extend the coverage of unemployment insurance and to provide health insurance and a variety of other social benefits. If some or all of these measures pass, at least a part of the cost will probably be paid by employers in the form of payroll or other taxes.

By far the most publicized labor plank in the Democratic platform is the one calling for the repeal of the Taft-Hartley Act. This is what the labor unions want most, and this is what the President has promised to deliver. It often appears that the victorious administration is committed to a pure and simple return to the situation that existed under the predecessor Wagner Act. Whether such a step is possible is at least open to doubt. It would require a reversal of position on the part of many of the more conservative Democrats, who voted not only for the original law, but also to override the President's veto.

Such a complete reversal is not required for the Democrats to fulfill their campaign pledges. In a less well-known plank, the platform promises to "advocate such legislation as is desirable to establish a just body of rules to assure free and effective collective bargaining, to determine in the public interest the rights of employees and employers, to reduce to a minimum their conflict of interest, and to enable unions to keep their membership free from Communist influence". These objectives go far beyond the purposes of the original Wagner Act, which sought only to guarantee to employees the rights of self organization and of bargaining collectively through representatives of their own choosing.

As a matter of fact, the Democratic platform promises to do many of the same things which the Taft-Hartley Act tried to accomplish, as for example, keeping unions free from Communist influence. It is for this reason that many observers in Washington believe that if the Taft-Hartley Act is changed by the next session of Congress many of its features will, nevertheless, continue to be the law.

There are many features of that law which the President himself may be reluctant to give up. In his "State of the Union" message early in 1947 he made proposals for outlawing jurisdictional disputes and "unjustified" secondary boycotts — matters which are covered by the Taft-Hartley Act. It is difficult to see how he could have won his highly-praised victories over John L. Lewis without the powers provided by that Act. It would not even be inconsistent with the Democratic platform if some of the union unfair labor practices were continued.

The labor unions are no doubt prepared to exercise their new-found political strength. One may, therefore, anticipate that there will be many attempts to change the Taft-Hartley Act, and it is likely that they will meet with some success. It appears to be unlikely that the total imprint of that law will be erased.

* * *

A curious anomaly arising out of the labor developments of the last month is that, just as the voters were making up their minds to elect an administration pledged to the repeal of the Taft-Hartley Act, one arm of that administration, the National Labor Relations Board, was issuing the hardest decisions yet under that law. How long these decisions will remain in force is, of course, open to considerable question, but they are now the new labor relations rules which must be observed.

In a recent decision, the NLRB laid down a series of rules which had the effect of restricting union picketing activities substantially. It declared picketing which blocks the entrance to a business establishment to be illegal. Non-strikers must be allowed to go through the picket line. (Threats of violence are equally barred; name calling alone is permitted as an exercise of free speech.) Where a union engages in such illegal activity, the employer or a non-striking employee may go to the NLRB for relief in the form of a cease-and-desist order which is enforceable by the courts. The NLRB in its decision in this case established a broad principle by issuing its cease-and-desist order not only against the guilty pickets, but also against the local union because it was responsible for the wrongful acts, and against the international union because it knew of and ratified the wrongful acts and because its representative was present at the time the acts were committed and did nothing to condemn or disavow them. Particularly important in the decision that the local and, especially, the international unions are equally guilty is the fact that it opens the way for damage suits against these organizations resulting from the illegal acts of their subordinate groups or their members.

The last month also saw an NLRB decision which has been called by the labor unions "a blueprint for union-busting". This is the decision in which the board ruled that "economic" strikers who had been permanently replaced could not vote in representation elections. Economic strikers are those who are out for the purpose of making some gain in their wages, hours, or working conditions. They must be differentiated from strikers who are out to protest some employer's unfair labor practice, such as a discharge for union activity. Presumably, the same rule would not apply to unfair labor practice strikers.

According to the board, this ruling was required under the new pro-

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vision of the Taft-Hartley Act denying voting privileges to strikers who are not entitled to reinstatement.

The labor unions argue that this ruling permits an employer to cause a strike by denying a union's legitimate demands, then to replace the strikers, and petition the NLRB for an election in which the strikers would be ineligible to vote. In such an election the newly employed workers would no doubt vote against the incumbent union, which would then lose its status as the collective bargaining representative.

* * *

As anticipated on this page last month, the Supreme Court denied the petition for reconsideration in the case which it laid down the Bay Ridge rule. As a result the Wage and Hour and Public Contracts Division began enforcement of the rule on October 18, 1948. Employers who have not yet reviewed their overtime procedures to see that they are in conformity with the rule are advised to do that immediately. Neglect in this case may ultimately be very costly.

The Wage and Hour Division also announced that employers who are engaged in interstate commerce but who have contracts with the federal government and are therefore covered by the Davis-Bacon Act are also required to conform with the new rule.

Chicago N. L. A. Meeting

(*From page* 66)

Victor J. Azbe (Azbe Corp.) told of a burner used in one plant which delayed the mixing of the gas and air, resulting in a longer and more luminous flame. He also suggested the use of many small jets distributed over the area of the hood for better results.

T. R. Ellerbeck (Utah Lime & Stone Co.) described an installation which is successfully burning natural gas. This burns the gas in an annular ring between an inner core of primary air and an outer ring of secondary air. This, he said, results in a flame with characteristics similar to a pulverized coal flame and the flame is regulated through control of the secondary air.

Further discussion of this subject emphasized the superiority of natural gas for firing vertical shaft kilns, giving both a better lime and greated capacity than pulverized coal. Irving Warner (Warner Co.) pointed out the basic differences between burning in a boiler and in a shaft kiln. The latter is a specialized problem with which most combustion engineers are unfamiliar.

Kiln Rings The subject of clinker or ash rings in pulverized-coal-fired rotary kilns received its usual large share of attention. One company was reported to have considerably slowed down ring formation in a kiln by locating the burner pipe below the center of the kiln and parallel to it. The comment was made that such a low flame results in much of the clinker-forming material being trapped in the bed of lime which has already passed through the burning zone, thereby reducing ring formation.

Methods of removing rings were also described. Most unusual was a water system whereby water is applied slowly to the crown of the ring by means of a long pipe with a ⅜-in. nipple while the kiln rotates slowly. Usually applications last from 10 to 15 min. before the water starts to puddle and it is then shut off for ½ to 2 hr. After several applications the ring starts to cake off and after 2 or 3 days the entire ring is out. The fire is shut off during treatments unless the ring is near the end of the kiln. Water pressure of 40 to 50 lb. is adequate except when the ring is far back in the kiln. Care must be taken not to break out the kiln lining. A method of removing rings by boring was also mentioned.

Absenteeism As in most other industries, absenteeism is a major problem, especially when it affects key men in a plant. Most labor contracts apparently include no penalty and it was felt that such penalties would probably not be enforceable under present conditions, especially inasmuch as unions prefer to let management impose the penalties.

One Canadian producer solved his problem by paying a bonus of $5.00 every two weeks for constant attendance. He warned that care must be taken that no injustice is done and that no one gets away with anything.

Another producer sends nonnegotiable checks for the time lost to the wife or parents of any employee absent without a good reason. The psychlogical effect of this method was said to be terrific.

Another system involved an absence record. In cases of unauthorized absences only a man's regular time card is replaced with an absence record card. This must be presented to the foreman to get his time card back. In this case the company's contract with the union allows the company to lay a man off for 1 day for the first absence, 2 days for the second, 1 week for the third, and to discharge him for the fourth such absence. The threat implied in this system has kept offenders at a minimum.

Other items discussed included delay blasting switches, the effect of air temperature on hydration, bucket elevators for handling fine materials, etc.

Gypsum and Gypsum Products Establish New Production High

Domestic production of crude gypsum established a new record high in the second quarter of 1948 when 1,773,344 short tons of crude gypsum were mined, according to reports to the U. S. Bureau of Mines. Imports of 720,207 short tons were a 76 percent increase over the corresponding quarter of 1947. Production of calcined gypsum also reached a record high of 1,589,643 short tons. Sales of most gypsum products showed increases over the first quarter of 1948, as well as increases over the 1947 rate; and most items set new records for sales.

In general, the building materials showed the greatest gains in the list of gypsum products, notable among which was 633,137 M square feet of lath in the second quarter of 1948—a 62 percent increase over the corresponding period in 1947. As a consequence of increased lath sales, building-plasters sales continued to increase rapidly in volume.

The construction boom was also reflected in a record production of 402,828 short tons of portland-cement retarder—a 36 percent increase over the second quarter of 1947. Significant increases in demands for gypsum products in other industrial uses manifest the general effort at maximum industrial output.

These new high levels of production and sales were made possible by extensive modernization of plants and expansion of capacity to meet the continued and increased demand for gypsum products in residential and industrial construction and other uses, and by improved labor and supply conditions.

Salt Production in 1947 Increased by 1,000,000 Tons

In 1947, the salt industry attained a new production record, according to reports of producers to the U. S. Bureau of Mines. Output totaled 16,138,374 short tons, compared with 15,132,145 tons in 1946. The salt was produced by 73 plants owned by 49 companies in 13 states and Puerto Rico.

The increase was due chiefly to greater production of salt for use in the chemical industry. Brine salt was 9 percent higher than in 1946 and rock salt 10 percent, whereas evaporated declined 3 percent.

Industrial Sand Producers Hear Analysis of High Court Decision in Cement Case

another ON THE SPOT report

ALMOST forty of the nation's foremost producers of silica sand gathered last month at The Greenbrier, White Sulphur Springs, West Virginia, for the semi-annual meeting of the National Industrial Sand Association. The three-day session, from October 20 to 22, dealt at considerable length with such diverse legal problems as compensation insurance, railroad tariffs, wage and hour regulations, the Labor-Management Relations Act of 1947, and the recent Supreme Court decision which invalidated basing point systems. With the exception of the last named, these subjects were handled by the same panel of able speakers who appeared at the association's spring meeting, and their comments at White Sulphur Springs were largely confined to developments within the last six months. An informal report on technical problems was presented by Stanton Walker, consulting engineer for N.I.S.A., and developments in the field of industrial hygiene were covered by Dr. Theodore F. Hatch of the Industrial Hygiene Foundation. Dates for 1949 meetings of the association were announced for May 11, 12 and 13 at The Homestead, Hot Springs, and for October 12, 13 and 14 at The Greenbrier.

By WILLIAM M. AVERY

Cement Decision The discussion of the basing point decision in the cement case was competently handled by Thomas Austern, counsel to the Business Advisory Council of the U. S. Department of Commerce, who managed to make a fair amount of sense out of a subject which he conceded to be composed largely of nonsense. In this speaker's view the cement decision may well prove to be the most far-reaching of the numerous earth-shaking Supreme Court decisions which have been handed down in the past three years. It has already brought about drastic changes in pricing practice in many industries, Mr. Austern pointed out.

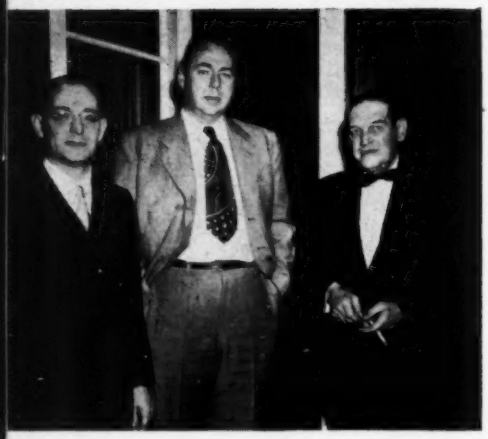
The speaker discussed briefly the five most commonly used methods of freight absorption, grouping them as follows: (1) Single basing point selling, or the "Pittsburgh plus" system; (2) multiple basing point, or the base price of the mill nearest the customer plus the freight from that mill; (3) national uniform delivered price, or the "postage stamp system", with goods delivered anywhere to anybody at the same price; (4) zone delivered price, or the same delivered price anywhere within specified zones; (5) freight equalization in order to meet the price of a competitor who is closer to a buyer.

The cement decision, according to Mr. Austern, may make all of these practices illegal, depending on the extent to which the Supreme Court has approved some weird theories advanced by the Federal Trade Commission. In the F.T.C. view the use of delivered price selling in an industry must be the result of a conspiracy. Their charge that delivered price selling results in illegal discrimination under the Robinson-Patman Act is based, Mr. Austern said, on the premise that the price of goods is *not* what the buyer pays, but what the seller realizes at his factory. The resulting denial of "the advantage of geographical proximity", according to F.T.C., is the denial of a legal right.

Heretofore, the speaker stated, it had been supposed that there must be a "substantial probability" of in-

• The National Industrial Sand Association's return, after a lapse of some years, to the world-famous Greenbrier, may have accounted for a bumper turnout of members' wives. More than 30 were present at the Fall meeting.

• Left to right: Mr. and Mrs. James B. Bergs, Mr. and Mrs. E. J. Campbell, Mrs. E. C. Sawyer and Mrs. Charles G. Runkle.



• Left: Thomas Austern, whose discussion of the Cement Decision provided one of the highlights of the three-day meeting at The Greenbrier, is seen here with George F. Pettinos Jr. and A. Y. Gregory.

• Interested spectators at the golf tournament were Mr. and Mrs. A. Y. Gregory and Mrs. A. Warsaw.

• Left: Among the many charming ladies whose presence brightened the gathering was Mrs. Vincent P. Ahearn. Vince probably won't thank us for using this picture of him, but at least he looks properly happy over having Mrs. Ahearn on the scene.

jury to competition before illegal discrimination could be proved under the Robinson-Patman Act. In effect, however, the recent cement decision states that there need be only a mere possibility of injury to competition. Similarly, it had long been thought that delivered price selling was not a violation of the Robinson-Patman Act if it was done in good faith to meet competition. This now appears to be true only if this practice is engaged in sporadically or infrequently. Whenever everybody meets everybody else's price, F.T.C. holds that *all* are engaged in an illegal practice.

If these F.T.C. theories are eventually upheld by the Supreme Court, Mr. Austern said, the only safe method of pricing will be straight f. o. b. plant pricing, since heavy monetary damages can be assessed against violators of the anti-trust lays. Even the prospect of such penalties has been sufficient to cause the cement, refractories and steel industries to switch to f. o. b. selling.

Hearings before the Capehart Committee, beginning in November, will attempt to determine the overall effects of the cement decision on the national economy. The outcome of this inquiry, and subsequent action by the Congress, will, in Mr. Austern's opinion, control selling practices for decades to come.

Technical Problems In his informal report on technical problems, Stanton Walker continued the discussion begun at Ashville a year ago in regard to the design of bag packing machinery which would reduce the severity of dust exposure. Proposed design modifications of existing machines for this purpose, Mr. Walker disclosed, have been submitted to producers of ground sand for study and comment. The most radical changes have to do with the use of better materials for resistance to abrasion, and the introduction of start and stop mechanisms to reduce dust exposure.

Mr. Walker commented on the very favorable reception accorded the association's *Manual on Safety in Sand Blasting*. Only a few hundred copies are now available out of the original printing of 10,000, and a new run will be made in the near future, incorporating a number of editorial changes.

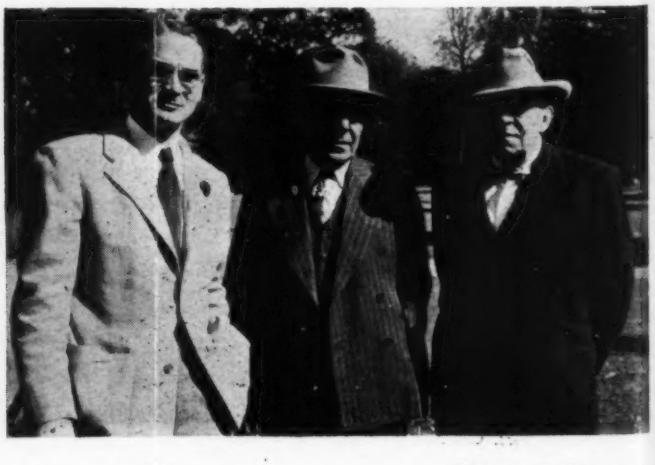
Industrial Hygiene Dr. Hatch discussed recent developments in connection with studies of silicosis. Evidence is accumulating, he said, that silicosis disabilty may in almost all instances be the result of infections superimposed on silicosis fibres, rather than due to the fibrosis itself.

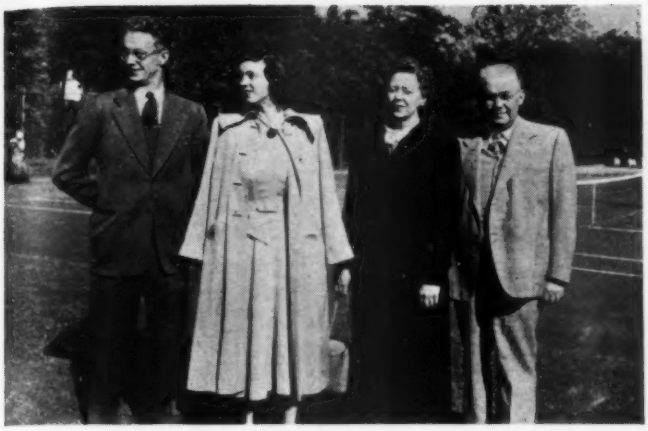
In the field of treatment, the speaker stated, a good deal of experimental work is being done with inhalation therapy. In administering medication in fine mists, use is being made of a drug that causes dilation of the respiratory system so that the materials may reach the lungs.

There is still need, Dr. Hatch said, for better medical diagnostic procedure to make it possible to

• Below, left: Just before teeing off, Dr. Theodore F. Hatch, one of the speakers on the program, obligingly posed for this picture with C. R. Wolf.

• Below, right: E. C. Sawyer, Frank T. Rogers and John F. Putnam soaked up a few rays of autumn sunlight while the golfers carried on excavating operations in some of The Greenbrier's devilish sand traps.





• Present for the first time as a family group were the Pearsons of the Standard Sand Co., Grand Haven, Mich. They are, left to right: Mr. and Mrs. Forrest S. Pearson and Mr. and Mrs. Joel G. Pearson.

• This happy group includes Mr. and Mrs. Robert R. Coxey, Mr. and Mrs. J. S. Coxey Jr., Mr. and Mrs. Henry C. Thornton and Mrs. Ahearn.

• Under Mrs. Wolf's close supervision C. R. Wolf reloads his movie camera for additional shots in his excellent coverage of N.I.S.A. meetings. Also ready to assist in the operation is Mrs. J. S. Coxey.

measure the effectiveness of treatment. Efforts so far to measure treatment results quantitatively have not been too successful, but there is considerable hope in a current attempt to measure the rate of gas exchange between the lungs and the blood.

Dr. Hatch reviewed some of the developments in Canadian experiments with aluminum dust during the last ten years, an outgrowth of the discovery that finely divided metallic aluminum in silica dust reduces its solubility about 90 percent. Some efforts have been made to speed up findings by administering aluminum dust to silicotics, but the only basis for measurement of results is the subjective response of patients. Results obtained so far with a few controlled tests have been inconclusive.

In discussing proposed rules and regulations for prevention of silicosis recently published by the state of New Jersey, Dr. Hatch pointed out that they *do* represent a praiseworthy attempt to write a code for a particular industry. He feels, however, that the proposed code is lacking in that it fails to take account of the fact that not all handling of silica involves dust. As drafted, for example, the code would apply to the handling of wet sand. The speaker believes that such a code should state that control measures must be adopted when the concentration of dust reaches a specified level.

Freight Rates William W. Collin, Jr., commerce counsel for the association, in reviewing the series of tariff increases granted since 1945 by the I. C. C., suggested that reduced volume as a result of present high rates may finally result in some form of government subsidy for the railroads. In his opinion, the I. C. C., in granting the increases so readily, may well have acted on the premise that the railroads must be maintained at any cost. A pending 13 percent increase over present rates, Mr. Collin pointed out, would bring tariffs for the industrial sand industry to 176 percent over the 1937 levels.

Compensation Insurance Theodore C. Waters, association counsel, in discussing legislative actions affecting workman's compensation insurance pointed out that in 1949 all except four of the state legislatures will be in session, and that it therefore is reasonable to anticipate increased activity with respect to compensation. He reminded his audience that occupational diseases are now compensable in 39 of the states; that all of these except Maine include silicosis, and that 17 states include partial disability, the remainder either denying such claims or having some specific limitation of liability.

The best answer to the problem of compensation for partial disability from silicosis, the speaker stated, may be contained in the West Virginia statute, which sets up three stage classifications, with very limited monetary benefits applying to each stage, payment of which operates as a release to the employer for any future disability.

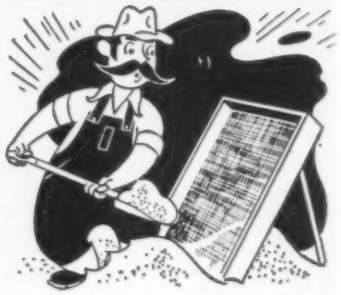
In the State of New York, Mr. Waters pointed out, the compensation now payable for permanent total disability from the dust diseases is exactly the same as that for any other type of disease or injury. He predicts that this pattern will be followed in a number of industrial states at the coming legislative sessions, indicating a potential increased cost in insurance rates.

Secretary's Report Vincent P. Ahearn, executive secretary of N.I.S.A., discussed wage and hour regulations resulting from the Supreme Court decision in the Bay Ridge case. In order to benefit from the Bay Ridge regulations, Mr. Ahearn pointed out that the employer *must* have a work week beginning at 12:01 a.m. on Monday. The time of payment is immaterial, so long as the computation of wages is based on a work week beginning Monday.

In discussing the Labor-Management Relations Act of 1947, Mr. Ahearn expressed the opinion that its major provisions with respect to collective bargaining are permanent, and will not be materially affected by any change in government.

(*Continued on page* 78)

Screenings



by William M. Avery

NOT long ago the American Management Association sent us for review a ducky little pamphlet entitled *What's Your Management I.Q.?* It consists of about a hundred multiple-choice and true-false questions dedicated to the noble purpose of showing operating executives and supervisors where to strengthen their job knowledge.

Just for the hell of it, we took the test ourselves. Our score indicated that we have a "Management I.Q." of 43, which seems to be several stages below hopeless so far as the

author of the pamphlet is concerned, since he states that a score of only 70 "means that one could well afford to undertake more training."

Among the questions we loused up was No. 81 which reads: *Though money is important, there are other factors which greatly affect the employee's job performance from day to day. They are generally headed by—*

(*a*) *wine, women, and song*
(*b*) *family and home life*
(*c*) *educational background*

We unhesitatingly cast our vote for "wine, women, and song," whereas the correct answer, according to the author, is "family and home life." Anyway, we're glad the guy attaches *some* importance to money, although a couple of questions later he contradicts himself with this flight of nonsense: *The most satisfying reward to the average worker is—*

(*a*) *overtime work assignments*
(*b*) *public credit for a job well done*
(*c*) *a pay raise*

Nope, the answer isn't (c), as we and a great many other morons had supposed; it's (b). Okay, Doc, have it your way, but it's our personal opinion that you're getting the cart before the horse by feeding this kind of bilge to employers *first*. It's the employee who needs indoctrination. We suggest a long-range program—one designed to change his point of view rather gradually over the next six or seven thousand years.

She's Termite-Proof, Too

LAST month we suggested that the P.C.A. undertake a promotional program capitalizing on Miss America's self-professed interest in cement mixing. Just to indicate that the idea isn't completely fanciful,

we are reproducing a recent publicity photograph of Miss Colorado, snuggling up to a couple of bags of Peralex, a lightweight aggregate mined and processed by the Alexite Engineering Division of Alexander Film Co.

Some practical soul will inevitably point out that the Peralex picture is clearly intended to show how light the material is, and that Miss Colorado is simply a means to that end. Okay, so portland cement *isn't* a lightweight material, but rather one noted for its strength and durability. So we take a picture of Miss America, casually holding a couple of 94-pound bags of cement. At least it'll show how strong and durable *she* is!

Calculatin'

IN A talk before the National Industrial Sand Association at White Sulphur Springs last month, Dr. Theodore F. Hatch of the Industrial Hygiene Foundation stated that the particles of dust created in a day's operation of an ordinary rock drill, if laid end to end, would encompass the earth 237 times at the equator. We realize, of course, that there is always a little give and take in cosmic calculations of this sort, but we *do* wish that after wrapping the earth up so thoroughly Dr. Hatch had found there were enough particles left over for a short side trip—say from Kankakee to Peoria.

No Comparison

AN ITEM from Bethany, Maine, tells a sad tale. Seems a guy named Chuck Davis operated a quarry truck there for some years without ever sustaining an injury. Then he went to a square dance and broke a leg.

If the irony of this puzzles you, Chuck, just reason it out a little. Probably the most dangerous thing around a quarry is dynamite. But at a square dance there are wimmen! That's the answer, Chuck.

Omniscience

NONE of the polls and forecasts managed to predict the likelihood of a change in White House tenancy with quite the finality of the Times Square bookshop which, two weeks before the election, displayed copies of *Harry Truman, A Political Biography* labeled "closing out at 19 cents". That cinched the matter for us, even if it had no visible effect on 23 million other guys.

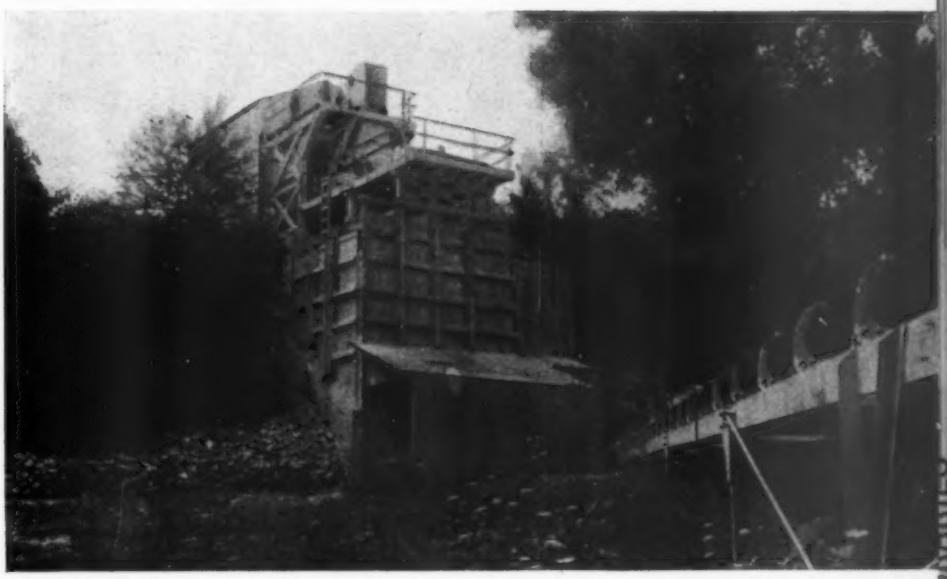
New Rock Loader Slashes Costs of Mining Limestone in Low Headings

another ON THE SPOT report

NOT long ago there came to our attention an unusually interesting series of developments in connection with Marblehead Lime Company's underground mining operations at Hannibal, Mo. Up until 1942 all rock for the Hannibal plant was broken and loaded by hand into 2-cu. yd. quarry cars operated on narrow gauge tracks. With 40 rock breakers working at the headings it was possible to load out only about 60 tons of stone per hour, and the cost of breaking and loading alone ran as high as 27 cents per ton.

By WILLIAM M. AVERY

Although the cost showing was admittedly poor, the operations were carried on under conditions which all but ruled out most alternative methods of handling the material. There was no standard power shovel on the market which could be operated in the low (8-ft.) headings, and the height of the headings was almost rigidly fixed by the formation of the deposit—an 8 ft. nearly horizontal seam of very high quality stone (better than 98 percent $CaCO_3$), underlaid by 25 ft. of poorer stone regarded as unsuitable for processing. The manpower shortage brought on by the war finally compelled the company to switch to some form of mechanical handling, and accordingly in 1942 a primary crushing plant was installed about 2,000 ft. from the mine entrance, and three used hydraulic shovels were purchased for loading trucks.



• A general view of the primary crushing and screening plant of the Marblehead Lime Company at Hannibal, Mo. Erection of this structure was one of the first steps in the company's successful effort to reduce mining costs. The conveyor at the right feeds the pulverizing plant. Small dump cars loaded directly from bins feed the shaft kilns.

Although production remained at a comparatively low level, on the face of it the change represented a tangible forward step, since 9 men were loading out the same tonnage (60 t.p.h.) that had formerly required 40 men. In addition to 3 shovel operators, the new method required 3 helpers and 3 truck drivers. Even more encouraging from the management's point of view was the effect on costs, which dropped from 27 cents per ton for the hand breaking and loading operation to 14 cents per ton for the machine loading, plus an additional 2 cents per ton for crushing and screening, or a net reduction of 11 cents per ton. It should be recognized that these cost figures are merely relative, and that without considerably more de-

• Right: A closeup of the gathering head on the rock loader. Gathering arms operate in a crab-like fashion to pull the material onto the chain conveyor. The machine will handle stones as large as 30 in.

• Below: This view of the rock loader in operation shows the low head-room which is characteristic of all the headings in the Hannibal mine.

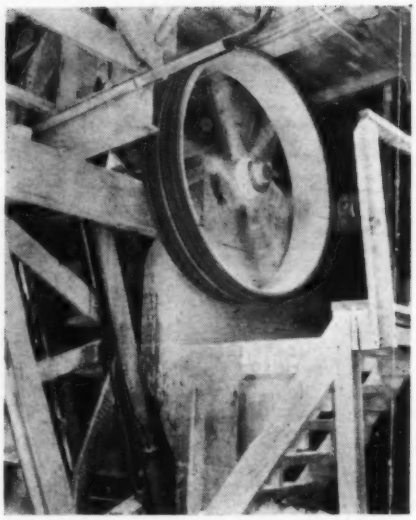
tailed information about the many factors included, they indicate trends rather than true reductions.

Convinced, nevertheless, that the equipment in use was not well adapted to the job, the company maintained a constant search for a better solution to the loading problem. After careful investigation an order was placed for a Joy Rock Loader, a heavy-duty machine designed for operating in seams averaging 60 in. or more in thickness. This unit went into operation in March, 1946, and saw continuous use until February of this year, when it was replaced by an improved model.

Mounted on crawler tracks, the Joy Rock Loader utilizes a patented gathering mechanism consisting of two arms or claws which pull the material onto a Universal chain conveyor (see cut). Both the gathering head and the tramming action are driven through a gear reducer by a 75-hp. electric motor. In addtiion there are two 7½-hp. motors for driving the conveyor and a 5-hp. motor on the hydraulic system which raises and lowers both the gathering head mechanism and the loading boom, and in addition swings the latter through a 90-deg. arc.

Although the machine will readily load at the rate of 100 t.p.h. or more, the average output at Hannibal is approximately 80 t.p.h. Loading costs with the new equipment have dropped to 3½ cents per ton, and maintenance experience has been excellent. One operator and one helper, the latter functioning in somewhat the same capacity as a pit man, carry on the entire operation. This two-man crew compares with the 6-man crew required for the hydraulic shovels. The manpower reduction, in combination with the sharp curtailment of maintenance cost, largely accounts for the savings shown. The Joy machine readily loads any stone up to a 30-in. cube.

At present the Joy Rock Loader is being used in combination with 2-ton International and G.M.C. short-wheel base dump-trucks which haul stone from the headings to the primary crusher. This phase of the operation also seems destined to undergo radical changes, for the company is currently negotiating for the purchase of two Joy 60E shuttle cars. These machines, designed for hauling in mines, are ideal for low head room operations down to 60 in. Material loaded into a hopper at the back is shifted forward by a chain conveyor, which is built in along the bottom for discharging stone at the primary crusher. Thus both loading and unloading can be accomplished without ever turning the shuttle car around. Each unit will carry about 13 tons per trip. By thus increasing hauling capacity the company expects to reduce loading delays at the headings. In this way it is expected to effect an additional saving in manpower and at the same time to increase the rate of feed to the primary crushing plant.



• A view of the 24- by 48-in. single-roll primary crusher.

Although the Hannibal property was originally an open quarry, the operations have been entirely underground since 1908. The mine is a room-and-pillar system, with rooms varying from 40 to 45 ft. in width and 20-ft.-square pillars. At least 16 headings are maintained so that drilling and shooting will not interfere with loading operations. Horizontal rib-type drilling is done from columns, using Gardner-Denver D-89R automatic feed drills, 1¼-in. hollow round lug steel and Timken bits. From 250 to 300 tons of stone is shot down at a time, using 1½- by 8-in. powder. Since the installation of the primary crushing plant it has not been necessary to do any secondary shooting. Two drillers and a blaster comprise the drilling crew.

From the 24- by 48-in. single-roll McLanahan & Stone primary crusher the stone is elevated to a 4- by 10-ft. vibrating screen on which the 4- to 8-in. pieces are scalped off into small side-dump cars for shaft kiln feed. Minus 4-in. stone goes via belt conveyor to either the pulverizing plant or to the mineral feed department, where hammermills and Raymond roller mills reduce it to 90 percent passing 200-mesh. A number of other materials are added in producing a wide variety of mineral feeds and mineral blocks for cattle feed. A part of the minus 4-in. stone also goes into the production of agricultural limestone.

In addition to the plant at Hannibal, Marblehead Lime Co. operates plants in Chicago, Marblehead, Quincy and Thornton, Ill. Wallace E. Wing is president and general manager of the company, and Robert A. Temple is vice-president in charge of operations. Clarence Stolberg is plant superintendent at Hannibal.

Industrial Sand Producers

(*From page* 75)

Although Mr. Ahearn is optimistic about the possibility for peaceful settlement of the critical situation in Europe, he believes that application of laws already on the books will in the months to come impose many of the effects of war on our economy. Because of this, he urges members of the association to get their plants in shape as quickly as possible, to build up adequate inventories of parts and materials, and to give full consideration to the employment of handicapped persons and others not subject to military service.

During the three-day meeting full use was made of the Greenbrier's excellent recreational facilities. A number of the sand producers enjoyed what amounted to a motorman's holiday by spending considerable time in sand traps on the resort's three golf courses.

Use of Industrial Explosives Climbs to New Mark in 1947

According to information released by the U. S. Bureau of Mines, consumption of industrial explosives in the United States reached a new high total of 651,390,937 pounds in 1947.

The following figures indicate the total amounts of all explosives used for quarrying and nonmetallic industries in 1947, as compared with 1946:

Black blasting powder, 1946—1,773,450 pounds; 1947—1,553,550

High explosives, 1946 — 102,146,358; 1947—109,820,924

Grand total, 1946—103,919,808; 1947—111,374,474.

Italian Sulphur Industry Hit By High Costs, Low Demand

High production costs, involving expensive raw materials, machinery and power, and low demand are the two major factors currently contributing to the decline of the sulphur industry in Italy.

The cost of producing sulphur is much lower in America, chiefly because certain extraction methods used here cannot be utilized in Italy due to different geological formations. Much of Italy's sulphur output comes from Sicilian mines.

12,000 Crowd Five Chicago Hotels for 36th Safety Congress

• Forrest T. Moyer, chief, Accident Analysis Division, U. S. Bureau of Mines, addressing delegates at the Safety Congress.

another ON THE SPOT report

MORE than 12,000 persons came to Chicago during the week of October 18-22 for the 36th National Safety Congress. By every yardstick, total attendance, number and excellence of programs, and the size of and interest in the equipment exhibits which completely filled two hotel exhibition halls, the 1948 congress measured up as the biggest and best programmed meeting ever sponsored by the National Safety Council.

The two exhibits, on industrial and public safety, were shown at the Stevens and Sherman Hotels, respectively. Together they represented a comprehensive display of the latest developments in health and safety equipment for traffic, factory, home, farm, and school.

Ned H. Dearborn was re-elected president of the National Safety Council. He will continue his work as administrative head of the council's staff in addition to his duties as council president.

James Tanham, vice-president for industrial and public relations of the Texas Co., New York City, was elected chairman of the board of directors of the council. He succeeds Cleo F. Craig, vice-president of the American Telephone & Telegraph Co.

In an important address before the entire congress, Mr. Tanham emphasized that safety should be a natural phase of every modern business. Business, he said, is generally carried out in the face of calculated risks. "It is not surprising, therefore, that progressive managements alert to the reduction of risks to their work forces, are taking advance steps through accident prevention programs to avoid the possibilities of injury or death to their employees on the job as well as *off* the job."

"Management must invest wisely in a safety program. Don't go overboard at once, but give it the financial support that its importance in operations justifies and most important, wholehearted enthusiastic support." For, he said, an inexpensive program with enthusiasm is far more productive than an expensive program without enthusiasm.

The feature speech of the week was made by Lieutenant General Robert L. Eichelberger. Back from a long tour of duty in Japan, where he served as commander of the occupying forces, the general was eminently qualified to comment on our problems and responsibilities in the Far East. Within the span of a very few years, he said, the Japanese people have gladly absorbed most of our democratic ideals. But, he emphasized, since we have disarmed Japan, we have assumed the obligation of protecting them — which might be a pretty large order some day.

Cement and Quarry Section:

The Cement and Quarry Section held at their technical sessions at the Stevens Hotel, October 20-21. Both sessions were well attended. F. J. Buffington, safety engineer for the New York Trap Rock Corp., was re-elected general chairman of the section. Other officers include Lea P. Warner Jr., Warner Co., vice-chairman; Robert S. Boynton, N. L. A., secretary; Dan Morse, Ideal Cement Co., newsletter editor; L. D. Cowling, Louisville Cement Co., engineering committee chairman; Ivan LeGore, P. C. A., program committee chairman; T. W. Jones, New Haven Trap Rock Co., membership committee chairman; Forrest T. Moyer, U. S. Bureau of Mines, statistics committee chairman; and F. L. Maus, Alpha Portland Cement Co., visual aid committee chairman. Gil Grieve will continue to represent the National Safety Council for this section.

• Gen. Robert L. Eichelberger, formerly commander of occupying forces in Japan, pointed out America's responsibility toward the disarmed Japanese.

Speakers for the October 20th meeting included Mr. Buffington, Erle L. Jackson, with the American Red Cross, Frank T. Sheets, plant engineer for the Southwestern Port-

(*Continued on page* 90)

Number of Injuries in Quarries and Nonmetal Mines in the United States, 1938-47, by Type of Material.

Year	Cement		Limestone		Lime		Marble		Granite	
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
1938	14	470	22	1,892	14	936	1	382	25	578
1939	12	457	14	1,743	7	1,004	.....	429	8	607
1940	15	521	21	1,953	12	1,056	3	242	12	543
1941	14	705	30	2,622	17	1,551	.....	240	8	719
1942	46	787	30	2,530	12	1,342	2	171	14	531
1943	21	773	31	1,936	15	1,284	.....	137	5	403
1944	15	637	29	1,596	14	1,050	1	102	6	385
1945	9	600	24	1,381	8	961	2	164	7	396
1946	12	834	26	1,878	4	1,011	.....	173	5	493
1947	22	800	27	1,960	6	1,230	2	165	2	765

Year	Traprock		Slate		Sandstone		Nonmetal Mines		Total	
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
1938	5	274	1	243	.....	252	6	726	88	5,753
1939	4	275	3	376	.....	313	10	719	58	5,923
1940	3	269	1	355	5	249	14	826	86	6,014
1941	4	361	1	323	2	349	17	1,182	93	8,052
1942	5	334	2	334	1	320	20	1,270	132	7,619
1943	4	254	.....	134	4	278	25	1,471	105	6,670
1944	3	228	3	146	2	293	17	1,283	90	5,720
1945	.....	195	.....	115	3	309	16	1,145	69	5,266
1946	3	221	2	181	3	346	24	1,390	79	6,527
1947	1	270	3	240	6	455	12	1,335	81	7,220

WORLD'S LARGEST BALLAST PLANT

Over-all view of quarry and crushing plant which supplies a million tons of ballast annually. At left in the above picture is the

Granite Canon Plant of Union Pacific Railroad Produces 500 Cu. Yards Of Crushed Stone Hourly

IT is a well known fact that railroads go to a great deal of trouble and expense to maintain their roadbeds. What is less well known is the expense and effort to which railroads go to obtain the choicest ballast for these roadbeds.

A prime example of this phase of railroading is the world's largest ballast plant at Granite Canon, Wyo. This plant is located on the main line of the Union Pacific Railroad on the section paralleling the eastern slope of Sherman Hill, 19 miles west of Cheyenne, at an elevation of 7500 ft.

The huge Granite Canon workings are operated by the Morrison-Knudsen Construction Co., of Boise, Ida., for the Union Pacific Railroad. Relatively new, construction of this plant began in July, 1944, and operations were started in February, 1945.

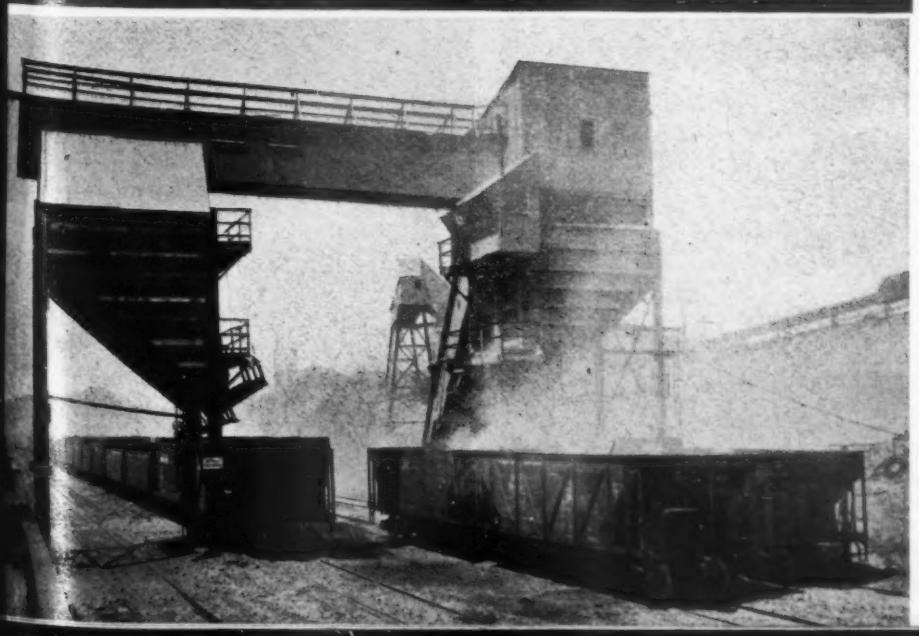
Since then, well over 1,800,000 tons of ballast have been quarried, and production is steadily increasing. It is believed that there is enough rock remaining in the 75-acre tract to assure production for at least 15 years at the rate of nearly 1,000,000 tons a year.

At the present time the plant, operating on an eight-hour day, turns out 4,000 cu. yds. of ballast a day, the eqivalent of about 80 carloads. The 75 employees necessary for the operation all live in Cheyenne, commuting between the quarry and the city in two buses.

Four products are made at Granite Canon. First and foremost, of course, is crushed rock ballast measuring from ¼ in. to 2 in. in diameter. The other three are quarry-run riprap, minus ¼-in. chips, and waste fines. At this plant the small amount of fines, or dust, is bagged and used for flood control. Riprap, which of course doesn't go through the crushers, is loaded into cars off three ramps. It is used for fill and

quarry from which rock is processed and trucked to the complex crushing plant at the right.

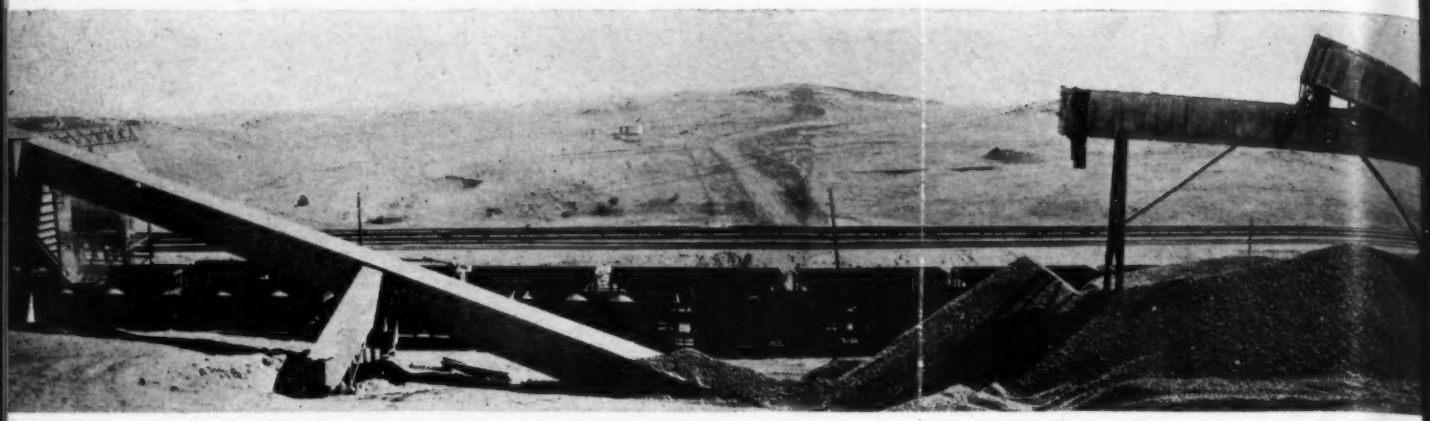
Above: After passing through the first two crushers, rock is dumped on a surge pile, from which it is fed through an outlet at bottom of pile onto a belt conveyor to secondary crushers. Below: Approximately eighty cars are loaded daily for shipment.



foundation work, and for embankment protection. Chips are used extensively in making roads and depot platforms.

The quarry at Granite Canon is in the shape of a horseshoe. At the deepest point, at the curve of the horseshoe, the face is 115 ft. in height. On the quarry floor two large shovels, one Model 1500 P & H 5-cu. yd. electric unit, and one Bucyrus-Erie, Model 54-B, 2½-cu. yd. diesel shovel, load enough stone to keep 10 mammoth dump trucks shuttling constantly between the pit and the crushing plant. All dump trucks are 10-cu. yd. Euclids of the end-dump variety, and are powered with 150-hp. Cummins Type HB-600 diesel engines.

The face of the quarry is shot down approximately every six weeks with TNT placed in the 15-ft. arms extending at right angles from the interior end of the coyote holes. The coyote holes, which vary in length according to the height of the face at that particular point of entry, are driven with dynamite and mucked out with an air slusher. For example, 50-ft. tunnels are driven for a face 70 ft. in height; 60-ft. tunnels for an 80-ft. face; and a 70-ft. tunnel for a face 100 ft. in height. The pocket at the end of the tees of one coyote hole is spaced approximately 25 ft. from the end of the tee of the adjoining coyote hole. These pockets are made large enough to accommodate the amount of powder necessary to shoot that volume of rock adjacent to that particular tee. The amount of powder required and the yardage obtained from each shot varies with the for-



Crushed to the required size for railroad ballast—between ¼ inch and 2 inches—the rock pours from the two belt conveyors to the right to form a gigantic pile. The ballast falls through holes under the pile onto the final belt conveyor (left), which in turn carries it to the carloading tipples.

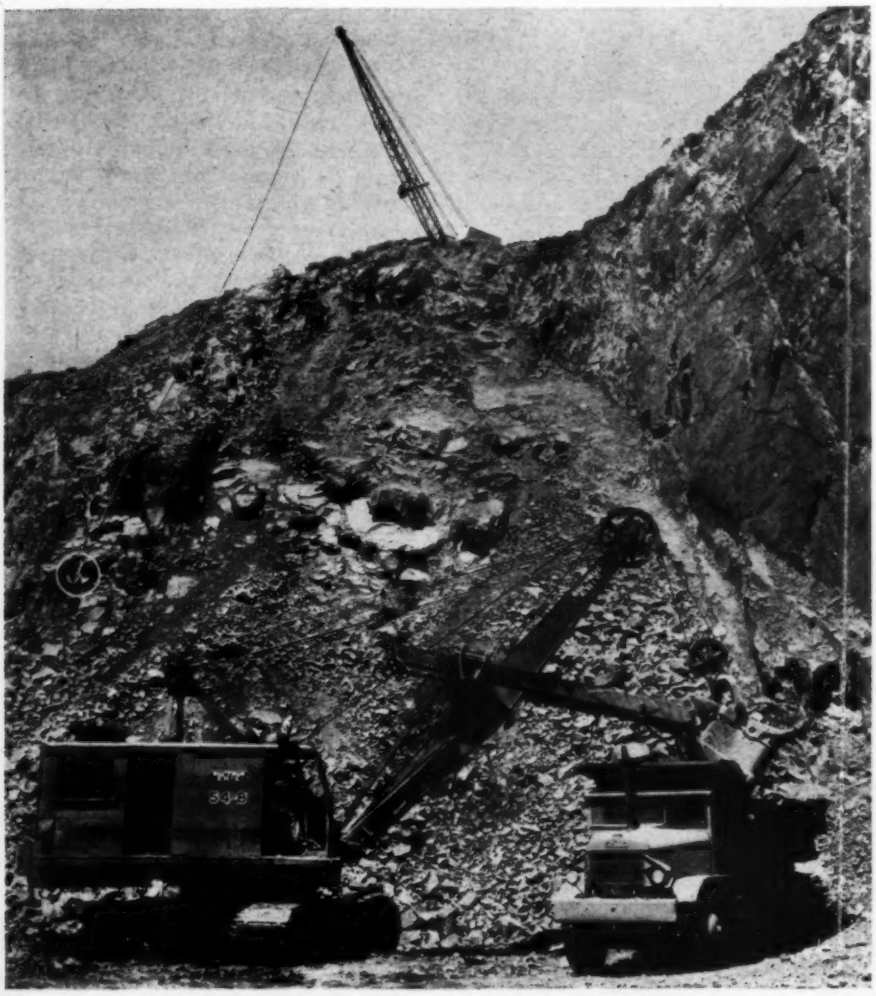
mation of that particular section of the face. An example of a recent shot follows:

Twelve holes were loaded with 1300 lbs. of gelatine powder and 120,150 lbs. of TNT. The net yardage was calculated at 74,473 cu. yds. However, due to a very large back break and an approximate 25-percent swell, this shot gave nearly 200,000 cu. yds. of ballast.

A dragline stationed on the rim of the pit ceaselessly plays an iron hook over the face to dislodge loose rock which might otherwise tumble down unexpectedly and jeopardize the safety of the workers below.

The Euclids coming from the quarry dump the rock into a hopper above a pan feeder charging a 42-in. Allis-Chalmers McCully gyratory breaker. Stone from this crusher is combined with the smaller quarry rock, bypassed with a grizzly in front of the gyratory, and carried on belt conveyors B1 and B2 to two Symons Type K vibrating grizzlies. The oversize retained on this grizzly is sent to a 7-ft. Symons cone crusher, while the undersize is fed into a Telesmith Hercules 5- by 22-ft. rotary screen. Crushed stone from the 7-ft. Symons and the fraction retained on the rotary screen are combined and carried by belt conveyor B4 to a mountainous surge pile which separates the primary and secondary crushing and screening departments. By separating the primary and secondary crushing departments with a surge pile, either phase may be operated if the other is shut down for repairs. Material passing and started off for further reduction through the rotary screen is conveyed directly to the waste stockpile.

Stone is reclaimed from the surge pile with a 36-in. belt conveyor (B5) running in a tunnel beneath the pile, and started off for further reduction in the secondary crushing department. This material is passed over two Tyler No. 900 vibrating screens fitted with 1¾-in. cloth on the top



Left: The shovel loading truck in action at the quarry. Note the dragline's hook (in circle above the shovel), dislodging loose rock on the quarry face.

Below: Ray Farrell (left), Union Pacific supervisor at the quarry, consulting with F. E. Newell (right), Morris-Knudson project manager.

deck and ½-in. screen on the bottom. Oversize retained on the top deck is sent to a 5½-ft. Symons breaker, or to one of two other Symons 4¼-ft. crushing units; material retained on the second deck is sent on a series of conveyors direct to the 60,000-cu. yd. ballast stockpile; and that passing through both decks is conveyed to the chip stockpile. Stone from the three cone reduction crushers is combined on a single belt conveyor (B8) and separated again over two Tyler No. 800 double-deck screens for further recrushing of the oversize. These two screens also make chips and ballast.

These products are conveyed directly to the chips and ballast piles on the same conveyors already described. A final conveyor belt (B14) reclaims the ballast from the pile, sending it on to two railroad-car-loading tipples of two chutes each.

Once the rock has been dumped into the primary crusher it is moved through the entire plant to the loading tipples upon a series of 22 conveyor belts totaling 6,500 ft. The rubber belts are 42, 36, and 24 in. in width, the belts narrowing as the rock material becomes finer. Most of the conveyor equipment was supplied by the Link Belt Co. and the Stephens-Adamson Co., while the biggest part of the belting was manufactured by Goodyear and Goodrich.

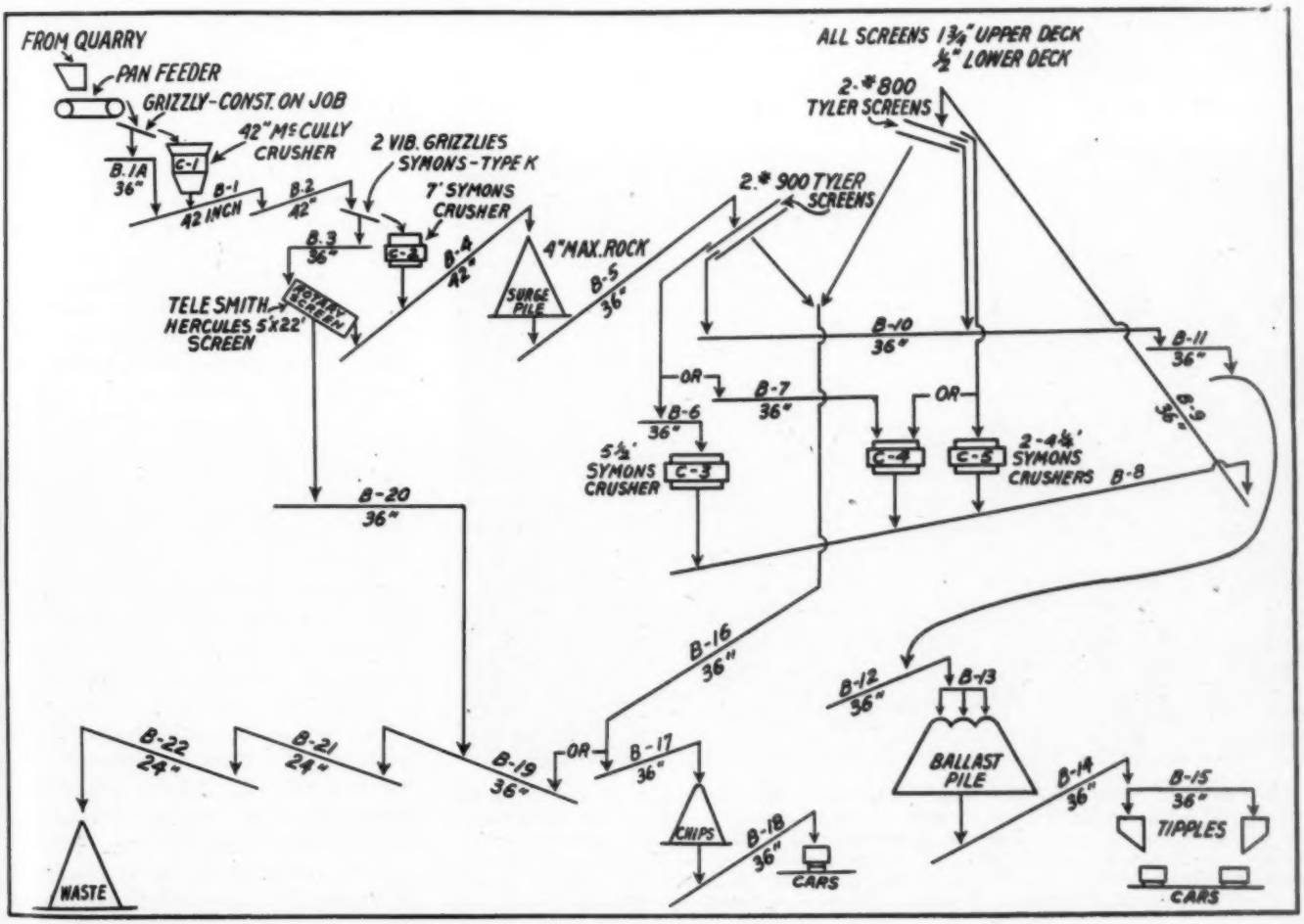
Mucking out a dynamite-driven coyote hole with an air-slusher.

The plant obtains its power over a 13,000-volt line from Cheyenne but at Granite Canon the voltage is stepped-down to 2,300 volts. Suitably-located transformers reduce to 440 v. for the smaller motors.

In addition to the trucks and power shovels, the project's two major pieces of equipment include three Caterpillar tractors, two slusher trucks, two portable welding trucks, 12 stationary electric welders, two flat-bed trucks, five pickup trucks, four draglines, a large stationary Ingersoll-Rand 2425-cu. ft. air compressor, and a second 800-cu. ft. compressor of the same make. The camp has its own machine shop and warehouses.

F. E. Newell is the Morrison-Knudsen project manager and Ray Farrell is Union Pacific's supervisor at the quarry.

It is predicted that by 1960 there will be eight million more cars on the roads than there are today, and that highway travel will increase to more than 450 billion miles a year. This means a lot of road work, which means concrete, which means cement. It also means the necessity for more careful driving.



Flow sheet of operations at Granite Canon, from quarry to car-loading tipples, showing crushers, screens, conveyors and stockpiles.

St. Louis Host to Industrial Minerals Division of A.I.M.E.

another ON THE SPOT report

THE fall meetings of the Industrial Minerals Division of the American Institute of Mining and Metallurgical Engineers were held concurrently this year in St. Louis, Mo. and Los Angeles, Calif. (See page 85 for the California report.) Meetings for

By EDWARD BRUNENKANT

the Mid-Western gathering were held in St. Louis' Sheraton-Coronado Hotel, October 13 through October 16.

Registrations for this three-day meeting approached 200 persons, including approximately 50 student-associate members. Every technical session was well attended, and the question-and-answer period following each paper was marked by spirited and intelligent discussions. Congratulations are in order to Richard W. Smith, chairman of the St. Louis A.I.M.E. Section, who was primarily responsible for arranging the fine program; to Dr. Edward L. Clark, Missouri State Geologist, who arranged for and coordinated the two field trips; and to the staff of the St. Louis Chamber of Commerce, who coordinated all activities and acted as genial hosts for the association.

Technical Sessions: From the many excellent papers presented during the technical sessions, we have abstracted, in this report, those which we feel will be of primary interest to our readers.

Professors Victor T. Allen and Albert J. Frank, both from the geology department of St. Louis University, collaborated on a paper entitled, *Some Recent Studies of the Clays of Missouri.* Professor Frank confined his comments to recent experiments on Cheltenham Clay. These experiments have indicated rather conclusively that the fissures and cracks in wall structures, built on foundations laid on Cheltenham Clay, are the result of a gradual movement of the particles making up the clay beds. This movement or plasticity of the clay is due to weathering caused by the action of bacteria. A partial remedy is effected by passing an electric current between two electrodes thrust into the Cheltenham beds.

A. R. Glockzin of the Ohio Geological Survey reported on the *Relationships of Jointing to Quarry Shot Patterns in Western Ohio Limestones.* Over 15,000 observations of quarry blasting were recorded. Statistical analysis of these observations seems to indicate that better fragmentations will result if shot patterns are coordinated with the natural fracture patterns. At present there is a general tendency for quarry operators to align their quarry faces parallel to the property boundary lines, ignoring the natural fissures. The results of this investigation will soon be published in pamphlet form and distributed to all Ohio operators.

• Signing up at the A.I.M.E. registration desk in the Sheraton-Coronado Hotel is H. A. Wheeler, one of the oldest living members of the association. Mr. Wheeler, a retired consulting engineer, joined A.I.M.E. in 1881.

The director of research for the National Lead Co., Dr. C. H. Moore Jr., presented a highly technical paper on *The Formation of Single Crystals of Synthetic Rutile.* Rutile is the oxide of titanium with a TiO_2 content in excess of 92 percent. When properly cut, these single crystals of TiO_2 make synthetic gems of singular fire and beauty.

One of the best received papers of the entire meeting was presented by Ralph W. Smith, director of research for the Mississippi Lime Co. Mr. Smith outlined the development of limestone mining in the St. Genevieve area, now one of the largest lime producing centers in the U. S., dwelling at length on the digging operations of his own company.

Everything in the St. Genevieve area was open quarry until 1920, when J. R. (Jack) Thoenen, now with the U. S. Bureau of Mines, supervised the opening of the first underground mine. Since 1936 all open quarries have been discarded in favor of underground operations.

• Left to right: H. A. Meyerhoff, history department, Smith College; J. E. Lamarr, Illinois Geological Survey; J. D. Kerr Jr., director, Industrial Bureau, St. Louis Chamber of Commerce; R. W. Smith, Natural Resources Department, U. S. Chamber of Commerce; H. A. Franke, coordinator of raw materials, Aluminum Ore Co.; A. M. Short, geological and mineral technologist; L. L. Clark, Missouri state geologist; N. S. Hinchey, geology department, Washington University; A. B. Cleaves, geology department, Washington University.

The Mississippi Lime Co., which finally bought up all other lime companies in the St. Genevieve area, operates 6 rotary kilns and a battery of 20 vertical kilns at this one location. In the event of a gas shortage, there are two Woods automatic gas producers, each of which produces enough coal gas to fire four or five kilns.

The largest mine in the area is the Mississippi Mine, opened in 1931. Headings in this mine measure 20 ft. high by 45 ft. wide, and are advanced an average of 10 ft. per round. All headings are inclined on a 4 percent grade, so that the excess water will drain back to a central station, where it is pumped to the surface and re-used. When the headings have penetrated so far, an additional 70 ft. of limestone is taken from the roof. The final room measures 45 ft. wide and 90 ft. high. Pillars are staggered between rooms.

All drilling is done during the day shift with unmounted jackhammers. No blasting is done, however, until all the men have left the mine. Approximately 600 tons of stone are shot in each round, using electric delayed caps with as many as 10 delays per shot.

Recently the company drove a new access tunnel which will permit direct movement in and out of the mine of even the largest piece of equipment. As a comparison of size, this access shaft is larger than the Holland tunnel.

Progress of Methods of Beneficiation was the title of the paper given by G. W. Jarman, Jr., president of Separations Engineering Corp. Mr. Jarman reviewed the progress of development in methods of separation and concentration other than by flotation. These methods included magnetic separation, electrostatic separation and separation by differences in specific gravity. Flotation always has required rather fine grinding—the most expensive item in any mill flow sheet. Consequently, other methods of either recovering coarse concentrates or discarding coarse tailings have big economic advantages. As a matter of fact, most of these methods have been adopted by the nonmetallic-minerals industry as well as by commercial users outside the mineral field.

William J. Kuntz, president of Lime & Hydrate Plants Co., discussed *The Manufacture of Lime* and *The Manufacture of Lime Hydrate*. Mr. Kuntz emphasized the advantages of vertical lime kiln construction against those of rotary construction. He stated, in no uncertain terms, that higher lime fuel efficiencies are best obtained with vertical kilns.

Other papers of interest were *Barite Mining and Production in Missouri,* by Garrett A. Muilenburg; *The Pegmatites of Jaspar County, Georgia,* by L. P. Warriner and B. C. Burgess; and *Economic Aspects of The Fluorspar Industry,* by W. H. Voskuil and N. T. Hamrick.

Two excellent field trips were arranged by Dr. Edward Clark, Missouri State Geologist, for those members who wanted a first-hand opportunity to visit nonmetallic mineral operations in the St. Louis vicinity.

So. California A. I. M. E. Convenes at Los Angeles

another ON THE SPOT report

THE 1948 fall meeting of the Southern California Section, American Institute of Mining and Metallurgical Engineers, was held October 14 and 15 in the Elks Club, Los Angeles. Separate sessions were held for the industrial minerals, metals, and petroleum divisions. All groups joined at noon on Friday, October 15 for a luncheon meeting at the Town House and, on the evening of the same day, for a stag banquet at which James Boyd, director, U. S. Bureau of Mines spoke on *Mineral Preparedness.*

By HARRY F. UTLEY

Dr. Olaf P. Jenkins, chief of the California Division of Mines, gave each division a brief preview of the Institute's 1949 annual meeting scheduled for February 13-17 at the Fairmont Hotel in San Francisco. Besides the usual program of interesting technical papers there will be several speakers of national reputation at the banquet and luncheon. Former President Herbert Hoover will likely be one. Pan-American Airways will provide free airplane field trips. For the Industrial Minerals Division the flight will include a trip over Stanford University, the plant of the Permanente Cement Co., the sand-and-gravel plants in the Livermore area, and the clay workings around Lincoln. Hotel reservations, he said, should be made immediately through the A. I. M. E. Housing Bureau, 61 Grove St., San Francisco.

The Industrial Minerals Division held both morning and afternoon technical sessions on October 15, L. A. Norman Jr. serving as morning chairman, with Ian Campbell in the chair during the afternoon. A number of technical papers were presented, several of which were of more than passing interest to PIT AND QUARRY readers.

Selection of Aggregates Some of the fundamentals involved in the selection of suitable sands, gravels and ledge rocks as concrete aggregates for large structures were pointed out in a paper by Elliot P. Rexford. Mr. Rexford has, since 1947, been chief of the petrographic section of the Corps of Engineers in Los Angeles.

Aggregates investigation, said Mr. Rexford, is divided into two phases; (1) the geological and (2) the laboratory-testing phase. Under the geological phase, predominant sources of aggregate materials such as stream beds and rock ledges were reviewed and the physical, chemical and thermal properties of the aggregates as they affect soundness, reactivity and compatibility in concrete were discussed by the speaker. He pointed out that a major task of this phase is confined to the identification and effects of "reactive" aggregates, since this feature has recently been found to be a major cause of the deterioration of concrete, particularly in southern California. Symptoms of reactivity include popouts, pattern cracks, exudations, and swelling or expansion. Some prevention may be had, he indicated through the use of low-alkali cements, and by use of an admixture consisting of finely-divided (325-mesh) highly-reactive material such as diatomaceous earth or volcanic ash.

Under the laboratory-testing phase, Mr. Rexford mentioned several newly-developed and lesser known major tests for soundness, reactivity and compatibility. Determination of the thermal expansion has been made by use of the interferometer and the SR-4 strain gauge with marked success, he pointed out.

Investigations are costly and are probably justified only for large concrete structures, declared Mr. Rexford, although smaller structures are subject to the same faults. When intensive aggregate study is not justified, it was suggested that careful attention be paid to determine whether

or not any deleterious matter is present. With these constituents absent the source of aggregate will usually be found suitable.

Roofing Granules Stuart H. Ingram, consulting mining engineer, presented an interesting review of *Roofing Granules in the Southwest.* There are two distinct types of roofing using the same materials. In one, the granules, felt and asphalt are carefully selected and purchased by a roofing manufacturer, who skillfully combines them into a finished roofing material, sold ready to lay. In the other, the components are selected by the actual roofing contractor, who purchases them for each job separetely and combines them only when the roof is actually laid. Each type has its own granule specifications, thus creating the demand for the production of two types of granules, fine and coarse.

Until recently, most of the "built-up" roofs using large granules were on commercial buildings where they were hidden by firewalls, or on residences, where the roof played little part in architectural treatment. Appearance was neglible and the only function of the granule was to protect the asphalt from weathering, so ordinary pea gravel obtained from the nearest sand-and-gravel plant was used. The use of pure white granules for exposed roofs has grown rapidly in southern California in recent years, however, and has opened up a tremendous demand for this product.

The rapid growth of population in California since the start of World War II was, of course, accompanied by a huge building program and, noting a scarcity in the supply of fine granules for use in manufacturing prepared roofings, the Minnesota Mining & Mfg. Co., operator of several large Eastern granules plants, began investigating the source of supply. Their intensive study brought to light an ideal deposit east of Corona, Calif. The rock is a hard trap, with good breakage and texture and takes color well. The company only recently completed the erection of an up-to-date plant on the site with a daily capacity of over 500 tons. Stage crushing is employed with intermediate removal of fines. The screening system is elaborate and involves a final re-screening of the finished product to remove tramp oversize and the last traces of extreme fines and dust. Coloring is done by the batch method, with careful adherence to color standards. This plant, in Mr. Ingram's opinion, will go a long way toward filling the needs for granules in southern California and will relieve roofing manufacturers of heavy freight charges formerly imposed when granules were shipped in from the East.

Another forward-looking company, the Gravelite Co., with a plant near Puente, Calif., is specializing in the production of coarse, artificially-colored granules. The speaker reported that this firm applies color by fusing a ceramic glaze containing the desired colored oxide to the base rock at a temperature of about 1,000 deg. F.

Perlite The subject of perlite continues to rate top interest. Two papers were read regarding the material, one by Charles W. Chesterman, associate geologist of the California Division of Mines, dealing with the occurrence of deposits in California; the other devoted to economic aspects of the expanded material and presented by C. R. King, mining engineer with the Standard Perlite Corp.

Deposits of expansible-grade perlite are widely scattered throughout California, Mr. Chesterman reported. While extensive areas of the state are covered in part by late Tertiary and recent volcanic rocks, not all of these areas contain perlite and other volcanic glasses. Perlites tend to develop best in the acidic volcanic rocks, said the speaker, in the so-called rhyolites where they are accompanied by thick sections of breccias and tuffs. In general they are grouped according to their modes of emplacement: (1) flows, (2) domes and coulees, and (3) composite. The largest group occurring in California is classed as flows.

Expanded perlite will have great potential value in many fields of industry in the opinion of Mr. King. The fields of use and the competition from other products in those fields divide the various types of expanded perlite into two principal categories. The first includes specialized products useful because of their unique properties which will sell at a relatively high price with a limited market. The other is a lightweight aggregate for plaster and a concrete in which a huge potential volume is seen by the speaker but which must sell within the price range of competitive products. The first type is extremely light, weighing from 2 to 6 lbs. per cu. ft.; for aggregates, the weight may run as high as 20 lbs. per cu. ft.

On a volume basis, the total cost of production increases in direct relation to increase in bulk density and potential volume of market, Mr. King revealed, while the possible selling price of the products decreases roughly in proportion to the increase in bulk density because of the competition from other cheap aggregates. One solution of this dilemma, Mr. King believes, is the integration of perlite - expansion plants into the manufacture of a finished or semi-finished marketable product wherein the expanded perlite is only one cost component of the product. Another possible solution, in the speaker's opinion, will be a reduction in the cost of packaging, now largely a hand operation.

Pegmatite Resources *Pegmatite Resources* in the Southwest was the title of a paper by Richard H. Jahns, associate professor, California Institute of Technology.

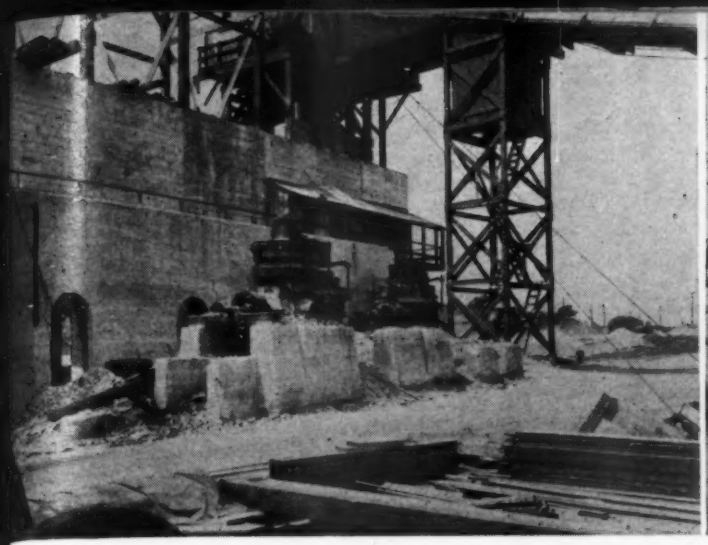
The pegmatites occur chiefly in the Rocky Mountains of northern New Mexico, the Peninsular Range of southern California, the Sierra Nevadas in south central California, and in other spotty locations in Nevada and Arizona. Nearly all are truly granitic in composition with abundant potash feldspar.

Most of the deposits in the Southwest face the unfortunate handicap of relatively high transportation costs to centers of demand but there are fair possibilities for future development. These could probably be improved, in the opinion of Prof. Jahns, by increased use of geologic data in exploration, development, and mining, and especially by improvements in mining and milling technique.

Talc Talc came in for considerable attention, being the subject of two papers. One, by Geologist Lauren A. Wright of the California Division of Mines, had to do with California deposits, 15 active properties of which are now being worked with a total annual output of about 75,000 tons, ranking California among the three top states in the output of this mineral.

Mining is carried on in a narrow 200-mile belt in the east-central part of the state. In the Mojave Desert, tremolitic talc is processed and marketed chiefly as a ceramic material. In the Death Valley area, both tremolitic and fibrous talc ores are produced mainly for use in the ceramic, paint, rubber, and textile industries. Deposits in the vicinity of the Inyo Range represent alterations of silica rock and dolomite. The

(*Continued on page* 90)



• Two fire-blackened crushers at the Consumer's Company's crushed stone plant at Racine, Wis., are grim testimonials of the intensity of the blaze which destroyed the plant.

• A view of the temporary crushing and screening plant, which has most satisfactorily maintained production of stone during the construction of the new facilities.

Trial by Fire

By EDWARD BRUNENKANT

Three months and eleven days after fire destroyed this crushed stone plant, operations were resumed. That this recovery took place during what was probably the most critical equipment shortage in history is a glowing tribute to the ingenuity of the men who guide the company's operations.

IN THE late evening on February 25, 1946, fire all but wiped out the Consumer's Company crushed stone plant at Racine, Wis. On May 6 of the same year operations were resumed with a temporary plant which has, in the two years, produced more stone annually than was produced by the permanent plant before the fire. That this remarkable recovery took place during what was probably the most critical shortage of all types of quarry equipment in history is a great tribute to the skill of the men who engineered this job. Nearly as remarkable as the recovery itself was the adroitness with which the quarry technique was changed from the old to the new. In a space of a few months, locomotive haulage in the quarry was discarded in favor of trucks; quarry cars and hoist were replaced with a long conveyor belt; and the primary crusher was set on the quarry floor.

At the time of the fire there were small tonnages of stone in stockpiles. In order to provide all of the necessary sizes demanded by Consumer's customers, a small screening plant was erected. As the stockpiles dwindled, however, it became imperative to find new crushing facilities—or face the ugly alternative of closing down the plant altogether. With delivery schedule of new equipment quoted in years, O. Cheska, superintendent of the plant, followed the only course left and criss-crossed the country looking for used equipment. He brought back a Pioneer portable crushing plant.

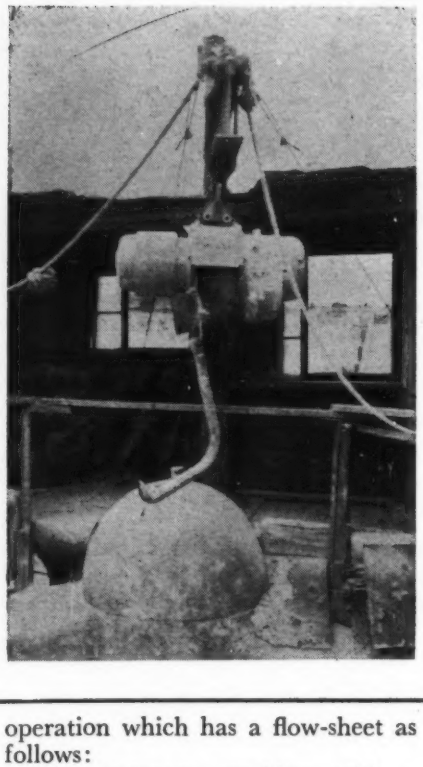
Temporarily, the portable plant was set in the quarry and fed directly with the Bucyrus-Erie 54 B, 2½-cu. yd. diesel shovel. However, the 15- by 36-in. jaw crusher in this unit was too small to handle the pit run material.

Fortunately, the primary breaker used in the old plant, an Allis-Chalmers 36-in. gyratory crusher, wasn't damaged too badly by the fire. The motor and starting equipment were torn out and sent to General Electric's shop in Milwaukee and rebuilt. The crusher was knocked down and, with the help of a huge locomotive crane borrowed from Chicago & Northwestern Railroad, loaded on a flat-bed trailer and carted down into the quarry. The 54-B, rigged with a shovel boom, was used to set the crusher. The heaviest piece weighed some 45 tons.

With the 36-in. gyratory set in

• After the fire it was decided to revamp the quarry operations. Trucks replaced the old railroad quarry haulage; a new conveyor belt was substituted for the archaic quarry car and hoist; and the primary crusher was set on the quarry floor. This view shows the new conveyor with one of the new trucks dumping over the primary crusher.

• Rock jams in the primary crusher are easily broken up with this electric hoist.



the quarry floor, the plant had more primary crushing capacity than the secondary plant could handle. To ease some of the load off the secondary plant, a second gyratory breaker, an Allis-Chalmers model No. 6K, was set behind the big crusher. It, too, was salvaged from the fire.

After the fire, the locomotive system of quarry haulage was discarded in favor of dump trucks—two 15-cu. yd. Euclids and two 6-cu. yd. surplus army trucks. A heavy-duty Yale electric hoist was installed over the primary crusher to break up jams resulting from overloading.

Until the new 36-in. belt conveyor was built, the trucks also carried the stone from a bin near the primary crusher up to the screening plant. Trucks are still used to convey the stone from the bins beneath the screening plant to the semi-temporary recrushing and sizing plant.

Since the fire the company has had two major problems to handle: to provide sufficient temporary crushing and screening facilities to care for the demand for stone, and at the same time, to build a modern permanent installation. Both problems have been solved successfully. How successfully is partially indicated by the volume of stone that the company has produced since the fire. In the year of the fire the company crushed and sized 148,583 cu. yds., and in the following year practically doubled that figure, with 286,842 cu. yds. It is expected that the new permanent plant will be running early this winter, at which time we hope to bring you, in these pages, a detailed report of its operations.

36th Safety Congress

(*From page* 79)

land Cement Co., and Milo N. Nice, of the Hercules Powder Co. Forrest T. Moyer drew some conclusions from the U. S. Bureau of Mines' statistical analysis of accidents in quarries (See table on page 79 for accident statistics.)

At the conclusion of the business sessions, the excellent slide film on jack hammer safety was shown. Copies of this film may be purchased from the National Safety Council.

A.I.M.E. at Los Angeles

(*From page* 86)

mines of this latter area that contain talc of unusual purity were revealed by Mr. Wright as the nation's principal war-time source of strategic steatite.

A. E. J. Engel, formerly with the U. S. Geological Survey in the East, recently came to Pasadena as an assistant professor in geology at Caltech. Drawing upon his Eastern experience, he gave the engineers assembled at the meeting a brief description of the talc deposits of New York state. Those in Lewis and St. Lawrence counties in the northwest Adirondack Mountains are of greatest importance, he declared, having an annual output in excess of 100,000 tons. All deposits are of pre-Cambrian age and occur within highly deformed and crystallized marble. Seven talc mills operate in the area. Methods are not especially progressive in the speaker's opinion, but he cited a modern new plant in the Gouverneur district just starting operation which has a flow-sheet as follows:

After primary crushing with a gyratory breaker, a 500-ft. conveyor will carry to storage, followed by drying and secondary reduction with a Symons shorthead cone crusher in closed circuit with a ⅛-in. screen. From dry storage a Merrick Weightometer feeds C. H. Wheeler air mills for fine-grinding and a Hardinge mill in closed circuit with Raymond separators for standard grinding. Conveying to bulk storage and packhouse by Fuller-Kinyon system, and bagging by St. Regis packers.

Glass Sand Chairman Campbell also introduced Paul J. Oertel, manager of the new Corona, Calif., silica-sand plant of the Owens-Illinois Glass Co., who spoke extemporaneously (and off the Institute record) regarding the processing of glass sand at the plant. Mr. Oertel has been with Owens-Illinois since his graduation from Shurtleff College in Illinois in 1930, first as raw-materials analyst at the Alton, Ill., plant and, since 1937, at the Los Angeles and Oakland, Calif., plants. He was assigned to the management of the Corona operation when it went into production in 1947.

Anti-Gas Tax Diversion Move In Tennessee Blocked by Ruling

A campaign for adoption of a Tennessee state constitutional amendment outlawing diversion of gasoline and other automotive taxes to non-highway purposes, which had been supported by the Portland Cement Association and numerous other groups, was temporarily dropped as a result of a state attorney general's ruling that the proposal could not go on the November ballot because of legal technicalities.

Although the proposed amendment was approved by both the 1946 and 1947 sessions of the Tennessee legislature, State Attorney General Roy H. Beeler ruled it could not go on the ballot because the legislature had failed to prescribe the manner and time for a public referendum on the amendment as required by the state constitution. He held legislative action would be required to correct the technical defect.

Experts Term Bag-Type Device For Mine Dusting Inadequate

A paper read before the fifth international conference of directors of Mine-Safety Research in Pittsburgh stated that tests conducted in the U. S. Bureau of Mines experimental mine showed limits to the ability of bag-type rock dusting devices to confine coal mine explosions.

The authors—Irving Hartmann, John Nagy and H. C. Howarth (superintendent of the experimental mine)—declared that while rock dusting to within 80 feet of the working faces, with the incombustible content of the dust at least 65 percent, has been considered adequate for years, rock dust applications should be carried to within 40 feet of the working faces. They gave as the chief cause of failure in the bag-type device "inadequate dispersal of sufficient dust into the air at the proper time."

Research workers of the bureau called upon the government to effect adequate changes in the Federal Mine Safety Code.

Production of phosphates in French North Africa (Algeria, Tunisia and Morocco) during the first four months of this year amounted to 1,910,570 tons, or a monthly average of 477,642 tons. During 1947 the monthly average was 451,903, and in 1946 406,362 tons. Exports during the January-April period this year totaled 1,871,454 tons.

Mechanics, Techniques and Economics of Expanded Clay-Shale Aggregate Production

PART III

By WOLF G. BAUER

another P&Q exclusive

THE foregone and earlier discussions on the "chemi-mechanics" of heating clays and shales for the achievement of a vesiculated glass or semi-glass structure have probably seemed somewhat too detailed for the practical plant operator. If they have served their purpose at all, they will have revealed even to the casual reader, however, the large amount of specific investigation yet needed to elevate the technique and process of bloating from the level of an art to that of an exact science. By bringing the variables and their relative importance to the readers' attention, a better correlation with current manufacturing practices may be established.

Three processing stages may be identified—raw material preparation, pyro-processing or bloating, and the aggregate finishing stage. As in other similar industries, processing costs, equipment selection, plant design and operating technique and control are modified by local conditions of raw material, fuel, labor, power, and market specification.

Many of the factors bearing upon the efficient usage of equipment and process methods treated in "The Lime Plant Operator" department of PIT AND QUARRY apply, of course, also in this industry. On the other hand, certain fundamental differences exist which provide the clay-shale aggregate manufacturer with problems quite apart from those in the allied minerals-processing plants.

In preparing the clay or shale raw materials for the burning and bloating process, unit operations consist of digging, dredging, blasting, scraping, transporting, conveying, feeding, pumping, while unit processes include crushing, grinding, sizing, settling, granulating, mixing, conditioning, pelletizing, dewatering, blunging, and drying.

Engineering and Research Needed Due to the range of differences in the physical makeup, the state of the deposit, and whether the process is to be designed for wet or for dry methods—such equipment must be carefully chosen, and must be designed and arranged as an engineered whole. It is the peculiar and unique combination of a variable raw material processed under conditions of manufacturing and market distribution which allows relatively small margins of profit, which makes it mandatory for the design and establishment of a profitable operation to be evolved only under the strictest engineering and supervision.

Preliminary small-scale tests on the raw material for purposes of establishing the best-suited handling and processing methods are certainly recommended in this field. With the shifting, in recent years, of production cost distribution, it is important that the growing new industry be based on modern plants which are not mere copies of older ideas and practices, plants which can control their product quality, continually improve upon it, and produce at various output levels within a reasonable economy. Only through a national association and cooperative research program, free of any inhibiting patent rights or monopolies, may the artificially expanded clay-shale aggregate industry assume the stature of a basic, modern, and integrated nonmetallics industry of the first order.

Various agencies composed of state geological bureaus, stations of the Bureau of Mines, universities with ceramic and mineral engineering laboratories, consultants, and research foundations endowed by industry all can be drawn upon for various contributions toward the development of raw materials and scientific processing of the same in the various sections of our country. Heat expansion of clays and shales with proper fluxing and gas forming additives, if required, may then be practiced and established in any region requiring this construction material.

Thus we feel that a fundamental approach is more valuable to the present or would-be producer than the simple recitation of what others are doing. Despite the apparent restrictive and secretive attitude of some operators in the industry at this time, there are no radically new or startling innovations and techniques to be found in this field, even though process equipment is often borrowed from other industries with varying success.

Clay Is Different! Raw material handling and processing will depend on four arbitrary material classifications: (1) material which is relatively dry, hard and rock-like; (2) that which is soft, moist, brittle, or mealy; (3) clays which are suspended in water and form a viscous or fluid slip; (4) wet and sticky or plastic clays exhibiting great adhesion, water retention, and deformation with pressure. In other words, hard, soft, fluid, plastic. Under this classification, material under classes 1 and 2 are relatively easy to handle and prepare for burning. No special problems except dewatering troubles of very colloidal types, processed in filters or settling devices, may be expected for those in group 3. It is the sticky, deformable material in the form of fat and plastic clays of group 4 which often seems to bother those not familiar with clay properties.

Hard shale and clay are handled and prepared for burning much as any other rock or mineral and ore. The softer types, especially those containing considerable moisture, can be conveyed or fed without special provisions. Care in crushing and screening equipment application must be exercised, however, as the tendency to squash, plug, arch, and pack is ever present. No great problems arise with fluid material, except as mentioned, and where a large amount of storage may be indicated.

The stickiness and great adhesion of some plastic wet clays require special handling techniques. Such material cannot be dumped into bins or silos, or fed from ordinary feeding devices. Some pre-drying prior to burning must invariably be resorted to. Such drying is facilitated by the excess heat generally available in the waste gases from the burning process. However, up to the point of drying, and during drying, the problem of handling such sticky clays with the minimum of labor must be solved and mastered.

A few rules and observations on handling such clays may be listed as of general interest.

1. Wet plastic clay which will hold its shape in lump form, will de-

form and flow slowly (a) when more water is added; (b) when pressure is applied, as by heaping it in high columns in bins or over hoppers; (c) by impact blows or vibration transmitted through the container walls.

2. Wet, sticky clay can be conveyed readily on belts. Belts must be cleaned on the return side. Scrapers are generally not as efficient as water and rotating brushes. Return idlers should not be solid cylinders, but rather in the form of spaced discs.

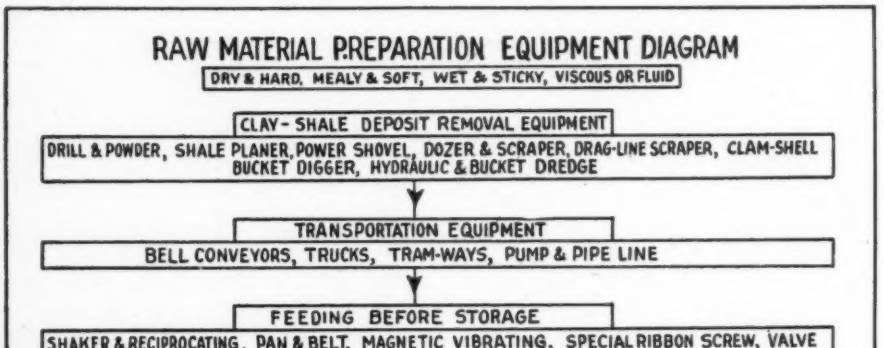
3. Such clay cannot be discharged efficiently from centrifugal bucket elevators.

4. If fed from screw conveyors, flights must be heavy, should be one-half or one-third pitch to reduce power of shear, should be open-spaced around the shaft as in modified ribbon flight sections. Bearing hanger supports should be streamlined, held to the minimum cross-section. Power is always exceptionally high, thus requiring substantial shafting and gears. (Shear resistance between clay-to-clay interface accounts for much of this power demand.)

5. Very wet and sticky clays can be fed from magnetic or hydraulic-pulsating high-amplitude feeders, on which the clay becomes semi-fluid. Reciprocating feeders are not practical. Pan feeders are hard to clean.

6. Highly-heated iron surfaces will cause sticky clay to slide off, due to steam pressure action at the contacting interface. This is a point to keep in mind when sticking troubles in chutes or rotary dryers are encountered.

7. Dewatering and drying such highly plastic clays is most difficult, not only because the pores are small and film tension great, but also because it is not easy to separate the clay into small lumps for exposing maximum surface, without attendant difficulties of re-agglomeration and balling-together tendencies.


RAW MATERIAL PREPARATION EQUIPMENT DIAGRAM
DRY & HARD, MEALY & SOFT, WET & STICKY, VISCOUS OR FLUID
CLAY-SHALE DEPOSIT REMOVAL EQUIPMENT
DRILL & POWDER, SHALE PLANER, POWER SHOVEL, DOZER & SCRAPER, DRAG-LINE SCRAPER, CLAM-SHELL BUCKET DIGGER, HYDRAULIC & BUCKET DREDGE
TRANSPORTATION EQUIPMENT
BELL CONVEYORS, TRUCKS, TRAM-WAYS, PUMP & PIPE LINE
FEEDING BEFORE STORAGE
SHAKER & RECIPROCATING, PAN & BELT, MAGNETIC VIBRATING, SPECIAL RIBBON SCREW, VALVE
SIZE REDUCTION
JAW CRUSHER, SLUGGING ROLL, TOOTHED OR GROOVED ROLLS, HAMMER MILL, DOUBLE SHAFT GRANULATOR, DRY PAN
SIZING
SHAKING-VIBRATING SCREENS WITH ELONGATED OR PIANO WIRE CLOTH, TROMMELS, KILN OR DRYER FEED WIRE-CUTTER, SAND-CLAY AIR CLASSIFICATION
DEWATERING & DRYING
DITCHED OR HEAP DRAINAGE, SHED NATURAL CONVECTION STORAGE DRYER, SHED WASTE HEAT CONDUCTION DRYING STORAGE, SLURRY THICKENERS, ROTARY WASTE HEAT DRYERS, DRUM FILTER, DRUM DRYER, INTEGRAL KILN CHAIN SLURRY DRYER, "FLASH DRYER"
RAW OR DRIED MATERIAL CHARGING TO STORAGE
FEEDER-ELEVATOR-OPEN BOTTOM SCREW, INCLINED BELT WITH TRIPPER, TRAM DUMPING STATION, TRAVELING CRANE CLAMSHELL LOADER-UNLOADER
CONDITIONING
PEBBLE-REMOVING ROLLS, PUG-MILL AGITATOR, REAGENT FEEDER-MIXER, TURBINE SLURRY AGITATOR, DUST-MIXER, PELLETIZER
TO
KILN FEEDERS AND KILNS

PREPARATION STAGES

Mining The pit mining or quarrying operation for winning the raw material is often much simpler than that of the hard rock operations. The hard and drier clay and shale deposits, of course, must be drilled and blasted. Overburden, as in any other type of operation, can be removed by the use of dozers, scrapers, shovels and trucks. Clays and shales of borderline classification as to hardness and consolidation may be tackled by extra-heavy shovel equipment and ripper attachments at face workings, and without the use of explosives. Certain deposits may also have to be mined underground or by glory-holing.

Improvements in shale-planers have provided the operator of comparatively thick deposits with a suitable tool for winning his raw material. These planers are simply vertical or inclined frames mounted on crawlers. An endless chain with attached cutting knives moves either up or down against the shale or clay bank, the height of which may range from 25 to 100 feet. Various types of these machines are being used in the clay industry. Cuts are from ½ to 1½ inches deep, the capacity of a machine varying with the depth of cut, and the height of face. Thus a 1-in. cut on a 25-ft. face will yield about 50 t.p.h., while a 100-ft. face increases this output to 300 t.p.h. Shales of considerable hardness and toughness can be worked with this equipment.

Not every deposit lends itself to planers. However, when employed, drilling, blasting, and secondary shooting is eliminated; no primary or secondary crushing is generally required for kiln and dryer preparation; and one operator on a semi-automatic machine with integral belt conveyor can supply the whole plant needs. An advantage of considerable importance in subsequent processing lies in the fact that this technique assures a continuous and uniform flow of material which is representative of the clay or shale deposit from top to bottom. Careful pit development, coupled with such equipment design and arrangement, presents a lucrative point of attack for achieving low-cost clay-shale winning or mining.

Wet and sticky clay beds may be developed by cross-cut drainage and air pre-drying technique *in situ,* or in the form of plowed-up heaps before transport to the processing point. Low-lying or submerged wet clays can be dredged, blunged or broken down by agitation with water, and

pumped to surge tanks or thickeners at the plant, where the clay is processed in a manner similar to that used in cement mills for wet-process methods. It is not the purpose here to go into mining and quarrying or dredging detail, as each case is a separate and individual engineering problem.

Transportation Trucks, of course, have been the prevalent medium to convey the mined clay and shale to the preparation plant. If the deposit is located directly next to the deposit, belt conveyors may be adopted. Intermediate distances with difficult intervening terrain or topography may dictate overhead tramways. With sticky clays, such conveyances must be especially fitted or modified for efficient discharge to adapt them to the peculiar conditions of adhesion. Aerial tramway buckets must have discharging features and design of dumping station for overcoming hanging-up tendencies. In dredging practice, pre-cleaning and blunging is advisable at the dredge, transport being accomplished by pumps through pipelines Both hydralic and bucket types are used.

Crushing The physical characteristics of the clay, namely its water content and plasticity, will directly dictate the preparation machinery to be used. Crushable or fairly dry clay and shale can be handled by feeders, jaw or swing-hammer crushers, and closed-circuited with screens as in the case of any other friable stone or ore. The softer and moister shales and clays are often reduced from lump form in dry pans, prevalent in many of the older and newer clay-working plants. Dry pans with rollers and plowing blades are usually fitted with grate bottoms for continuous discharge, although certain alterations may be made to give overflow discharge in successive stages with maximum retention time and mixing action during reduction.

Certain raw shales and clays may contain impurities or detrimental inclusions in the form of hard grains or pebbles which adversely affect the vesiculation process in the burning operation. An example of these may be limestone pebbles or marl concretions in clays of glacial origin. The removal technique of such material depends on the relative size, density, or hardness compared to the clay itself. Differential or limited crushing and narrow-range screening may be employed to remove such material. The clay industry often resorts to segregation during crushing in especially designed rolls. Thus corrugated conical rolls will tend to cause hard pebbles to travel toward the larger ends and there fall off. Grooves in the rolls are sometimes spiraled to effect a lateral removal of pebbles, while the softer material passes through them. The clay industry has developed other specialized equipment for such combined clay beneficiation.

Rolls themselves are widely used in the industry, generally in a specialized form. It should be remembered that the disadvantages of rolls are mainly in the relatively small reduction ratio of about 4:1, and the fact that soft, mealy, and sticky clays and shales are not well suited to them. Slugging rolls of the single or double type, fitted with heavy projecting teeth, on the face as well as on the breaker plate, in the case of a single roll, are used for certain lumpy shales.

Hammermills are used more frequently now than formerly in clay processing plants. Certain types incorporating movable or feeding breaker plates are designed to handle wet and sticky clays. Reduction ratios are large, and under correct speed and grate opening relationships, minimum fines may be produced with large circulating screen-oversize cycling.

Fine grinding is not necessary when rotary kilns are used, and so it is generally a problem of single-stage reduction. As pointed out, the use of shale planers in the pit obviates the necessity for subsequent shale reduction. When shale is blasted and shovel loaded, two stages of reduction may be used, such as jaw crusher followed by hammermill, rolls, or dry pan.

Very soft and friable clays or shales may be reduced in granulators of various designs. The writer's experience favors double shaft design with close clearances for self-cleaning between counter-rotating paddle blades or knives. Granulators and disintegrators may also serve the further purpose of conveying, feeding, or conditioning of clay and shale for subsequent drying and firing.

Sizing and Conditioning The importance of particle sizing in heating and bloating the raw material should not be underestimated, regardless of the type of kiln or furnace used for the expanding process. In the larger plants using two or more kilns, separate size fractions can be passed through each unit alternately or separately. More detailed discussion on this phase will be presented in a later installment of this series.

With hard shales and clays, this sizing is readily accomplished by the usual screening techniques and equipment. Separate kiln feed bins may be provided, as each size fraction will behave somewhat differently as to time-temperature reaction. When waste gas pre-heaters are used, sizing is again of broad significance, inasmuch as it determines preheater design.

Shales and clays which, due to their softness and moisture content, fall into the mealy class and pack rather easily are somewhat bothersome in screening. Piano wire or elongated-mesh screen cloth is to be preferred with such material. These clays can also be conditioned, insofar as dust is concerned, by slight moistening in a granulator used as a kiln feeder, causing the fine particles to agglomerate into small pebbles which form a suporting skin upon being suddenly exposed to the hot kiln gases. Rotary pelletizing machines can be used for this purpose, although actual tests should always precede installation of such units, due to the variability of clays. If dusting is a contant problem, the collected kiln dust may be mixed with moist raw clay in the conditioning unit, whatever form this may take.

Sizing of plastic and sticky clay for proper kiln feeding is best done by pre-drying. Pre-drying or drying is accomplished much more readily under control in small waste-gas dryers with such clays than in the pre-heating sections of rotary kilns. This does not imply that efficiency of heat exchange is gained thereby, but rather than cost of the handling and control of kiln feeding a semi-dried material over that of a wet and sticky material is improved. It is impossible to handle several hundred tons of wet plastic clay automatically without labor attendant from storage to kiln for the period in which the pit supply is shut off; but it is quite possible to make this handling-storage-feeding stage automatic with dried material. Here again, in economic balance of labor *versus* depreciation on additional equipment must be set up and studied. If sintering machines or drum furnaces rather than standard rotaries are used, this pre-drying becomes even more prerequisite.

Sandy clays may be beneficiated by pre-drying, hammermilling and air-separating the sand from the clay. The clay can then be moistened and

pelletized for kiln feed. De-sanding can, of course, also become an integral wet-process in which the clay slurry is pumped to kilns, and the classified sand used for heavy aggregate.

With clay slips or slurries, conditioning consists of thickening to a minimum water content and thorough blunging and agitating piror to kiln feeding. Water content may vary from 30 to over 50 percent, the plastic and fat clays requiring more water than the leaner types. Wet-process rotary kilns for expanded clay aggregate production must be of greater length for equivalent output. Continuous drum filters could be used ahead of kilns to increase their output, the dewatered filter scrapings being in the form of a fairly even-sized feed to kiln. Feeding of clay slurries can be done by the usual ferris wheel feeder synchronized to the kiln speed. Blunging or lump-breakdown is accomplished in paddle or ball-mill-type agitators prior to pumping at the dredge or water conditioning station. Certainly under suitable conditions wet processing of raw materials will constitute the most mechanized, best controlled, and lowest cost handling method for otherwise troublesome raw materials. We will take up the thermal economics of this method at a later discussion.

Aside from moisture and size conditioning in granulators, pelletizers, and blungers, conditioning also implies the addition of certain ingredients which promote the bloating process during firing. Thus tests on a small scale may have previously indicated that the addition of nominal and closely regulated quantities of various minerals and salts, gypsum, plaster, pyrite, flours of sulphur, or sulphur-containing solutions (as from pulp mill waste liquors, refineries, food, fertilizer, by-product coal, ore flotation or milling plants) will enhance and improve the vesiculation and expanding of an otherwise low-volatile clay or shale, or one requiring excessive fuel-reducing conditions if used without such additives. A large list of relatively low-cost and available fluxing agents is included under this conditioning phase, and much research remains to be undertaken along these lines.

Such promoting agents can be added in the conditioning unit acting as a mixer, and may be added by volume or weight as done in a number of similar industries. The choice of feed control depends on the uniformity of sizing and bulk weight or fluid density. The re-agent is fed by mechanically or electrically synchronized feeders.

Clay Drying Here again, since we deal with either lean and mealy, or fat and sticky clays and shales, equipment and method will vary. It is generally not within the economy of the industry to spend money on fuel for drying purposes. It rests, therefore, with the ingenuity of the plant designer to provide water and moisture removal wherever possible along the line, be that by drainage development of the deposit, alternate-progress scraping and spreading, ventilated and roofed storage sheds, waste-heat conduction drying in storage sheds using hot metal ducts, waste heat rotary dryers of special design, waste heat up-flow and cross-flow dryers, scraped hot drum dryers (when clay is too colloidal for efficient drum filters), combination convection-and-conduction drying during crushing-granulating-conveying, and integral kiln drying using litters, or a chain system in the case of clay slurries.

When an operation is designed for the usual 24-hour burning schedule with rotary kilns, and the pit or quarry operation produces for only 8 hours each day, 5 days per week, then the question and problem of adequate storage confronts the operator. That this becomes a problem of increasing seriousness with wetter and stickier clays is self evident. Mistakes here in design of equipment and methods for storage, crushing, and feeding always result in low capacity and excessive labor attendance. One must not shy away from some complication in design or arrangement of processing machinery when it saves direct labor. A 24-hour operation, producing a low-priced product, must be made highly efficient with the most up-to-date practice in order to maintain safe profit margins with even reduced output rates. Overnight or two-day storage of wet clay that is sticky requires an attendant in a clam-shell crane, scoop truck or feeding pit. The best solution to that is pre-drying by waste heat ahead of such storage, so that automatic feeding can be practiced from storage to kilns. The alternative is the wet-process technique.

If rotary waste-heat driers are used, they should be parallel-flow, in order to minimize sticking at the feed end. A scraper plow may also be employed in some extreme cases. Special lifters and tumbling cylinders increase the material surface area during the drying process. (More detailed information is presented in the Plant Operator series on drying practices.) Movable-breaker-plate hammermills are satisfactory for preparing the wet clay for the dryer, and these may be designed for the passage of hot waste gases through the mill. Dispersion or "flash" drying in combination with pelletizing arrangements may well constitute the simplest handling method next to wet process for such troublesome clays, even though it may seem more involved at first glance. Much depends on the action of the clay upon entering the rotary kilns, i.e., whether it has a tendency to ball up in the upper kiln end, or whether it disintegrates to dust and constitutes a loss, or whether it tends to form nodules through the rotary motion. It should also be kept in mind that with proper arrangement, kiln dust can be caught by wet incoming feed and re-worked for final use, as well as an aid in conditioning of raw material.

Every once in a while some one toys with the intriguing thought of softening the clay or shale to the plastic flow state in which it can be then forced through a die by an auger. This has been tried on a commercial scale in California under the product name of "Gravelite." The process, however, has certain limitations as to raw material characteristics. The power consumed in grinding and working the material to the optimum consistency, and then forcing it through multiple-opening dies is excessive, especially as the reduction of clay viscosity with water will increase the tendency of agglomeration and balling in the kiln.

RESUME

Up to this point it has been shown that considerable lee-way exists in the methods of raw material preparation. The reader can also well understand that proper equipment alone will not necessarily produce the most efficient operation, if such equipment is not integrated with local conditions and plant arrangement. Also that the cost of power, labor, and depreciation can easily become dangerously high before the actual expanding of the clinker process has even begun.

The solution to automatic and low-cost clay and shale preparation has not been entirely solved by our most modern techniques and machinery in the clay industry, but the specialized experience of the ceramic industry stands at the operator's dis-

(*Continued on page* 95)

personal mention

J. C. Witt

J. C. WITT, for the last ten years technical director of Marquette Cement Manufacturing Company, is now consulting engineer.

His first experience in charge of cement manufacture was as technical director of the Rizal Cement Company in the Philippine Islands. During a number of years before becoming a member of the Marquette organization in 1938, he was director of research for Universal Portland Cement Company, and its successor, Universal Atlas Cement Company.

His activities have included prospecting for raw materials, plant operation, experimental engineering, research, and the development of equipment, processes, and products. He has taken part in the design of several cement plants. In addition, he has been consultant on various projects, involving the manufacture and use of cement and other materials.

EDWARD J. BOCK, superintendent of maintenance at the Monsanto, Tenn., plant of the Monsanto Chemical Co., has been named plant manager.

OLIN R. BAILY, formerly chief construction engineer of Monsanto's phosphate division, was appointed maintenance superintendent to succeed Mr. Bock.

EDWARD C. MEAGHER, treasurer of the Texas Gulf Sulphur Company, has been named president of the United Engineering Trustees, Inc.

JOHN F. HALL has been appointed district engineer in charge of the New York office of the Portland Cement Association, according to a recent announcement by Frank T. Sheets, association president. Mr. Hall succeeds E. M. FLEMING, whose request for retirement was granted on November 1. Mr. Fleming has been a member of the association staff for more than 22 years.

As district engineer, Mr. Hall, under the supervision of Regional Manager M. J. McMillan, will direct field promotion in Connecticut, New York and New Jersey.

Mr. Hall, a civil engineering graduate of Kansas State College, joined the association staff in 1946 as a field engineer in the State of New York. Prior to joining the association he had held various engineering positions in city and county governments and also with a consulting engineering firm.

Mr. Fleming, who has held managerial positions with the association in the Eastern area for the last 13 years, entered its employ in April, 1926, in the capacity of field engineer in Indiana. He was appointed district manager of the New York office in 1935, and served continuously in that capacity except for an eight-year period from January 1937 to June 1945, when he was also manager of Eastern offices.

DONALD F. BIBLEHEIMER was recently promoted to packhouse foreman at the Sandt's Eddy plant of the Lehigh Portland Cement Co. Since July 19, 1948, he had been assistant packhouse foreman.

DR. WILLIAM B. BEAACH JR. has joined the staff of the Lehigh Portland Cement Co. at Metaline Falls, Wash., as plant physician and surgeon. He is the son of WILLIAM B. LEACH, Lehigh storekeeper at Metaline Falls.

JOHN C. BEST, vice-president of the National Gypsum Co., has been appointed chairman of the international affairs committee of the Buffalo (N. Y.) Chamber of Commerce.

E. B. SMITH, formerly plant manager for Cemento Portland Nacional, S.A., at Hermosillo, Son., Mexico, has accepted a position as plant engineer for the Southwestern Portland Cement Company at Victorville, Calif.

HERBERT W. POPE has been named assistant to the president of the Lawrence Portland Cement Company, according to an announcement released by James H. Ackerman, president. Mr. Pope's headquarters will be at the home office in New York.

obituaries

FRANK H. KILBOURN, 84, a founder in 1894 of the Owens Sound Cement Company, died on October 19 in Owens Sound, Ont., Canada. Owens Sound Cement was one of the firms involved in the Canada Cement merger of 1909.

FRANK J. GRISWOLD, 80, one of the founders of the American Gypsum Co. in Port Clinton, O., died on October 28 at his home of a heart attack.

Mr. Griswold retired in 1929 as vice-president and general manager of the company, which later became the American Gypsum Division of Celotex Corp. Before going to Port Clinton, he had been in the gypsum and plaster business in Iowa.

HARRY ARRICK, general manager and treasurer of the Wells Pit Sand Company, Natrium, W. Va., died several weeks ago at his home.

WAYNE E. AXTELL, 57, partner in the Larue-Axtell Pumice Company of Eustis, Neb., died recently at his home. The firm began operating about 40 years ago at Ingham, Neb., and 20 years ago opened a mine at Eustis.

HORACE V. BRUCE, a former president of the Fairlawn Sand Gravel Company of Paterson, N. J., died on October 13 of a heart attack in the Empire Hotel in New York City.

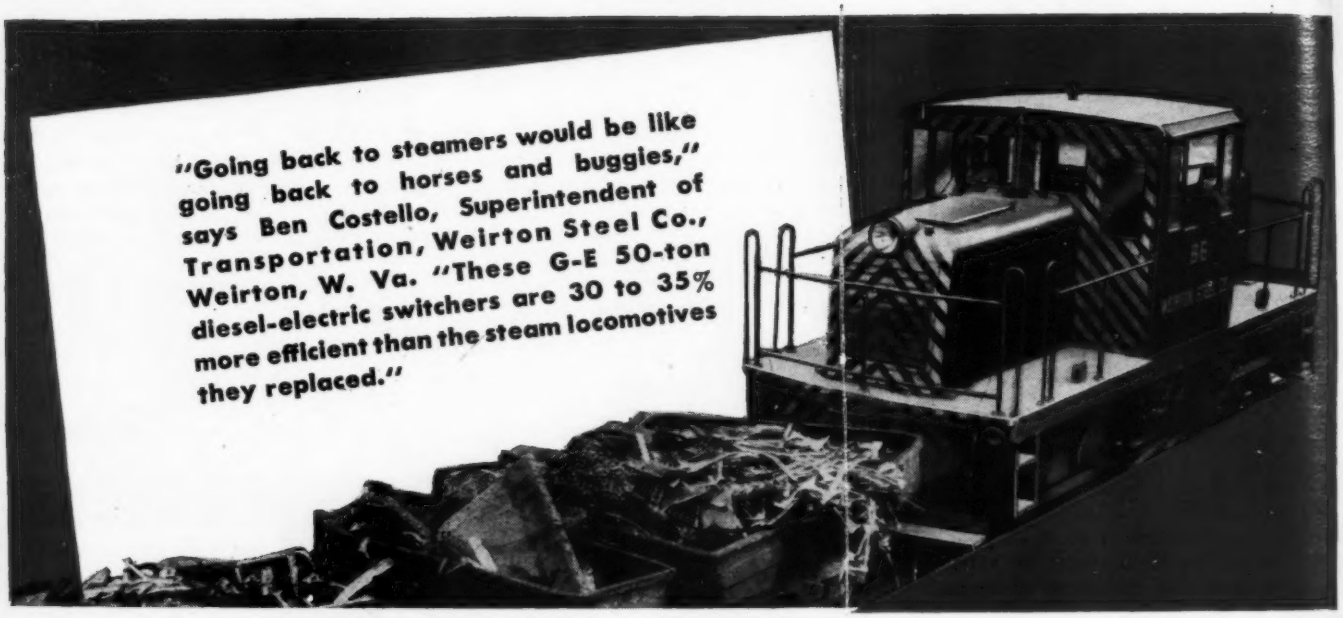
DAVID H. MACFARLAND, a former vice-president of the Medusa Portland Cement Company, died at Cleveland, O., on October 6 at the age of 76 years. Mr. MacFarland retired from his duties with Medusa six years ago. He had been assistant to the president of Universal Atlas Portland Cement Company in earlier years.

Expanded Clay Aggregates

(*From page* 94)

posal. No standard plant design can be shown as in many other industries, as is evident from the classification of raw material presented. The heat-processing phase will come under discussion in the next installment.

Goodbye "Horse-and-Buggy" Switching


"Going back to steamers would be like going back to horses and buggies," says Ben Costello, Superintendent of Transportation, Weirton Steel Co., Weirton, W. Va. "These G-E 50-ton diesel-electric switchers are 30 to 35% more efficient than the steam locomotives they replaced."

97% Availability

High-efficiency switching at Weirton is due to several reasons. The five peppy 50-tonners have an average availability of over 97 per cent, while the coal-burning steam locomotives they replaced were available for service 60 per cent of the time. Each diesel-electric is out of service only 20 minutes every three days for refueling, each steamer required 90 minutes refueling time every eight hours.

Working hours are long—24 hours a day, seven days a week; the loads are heavy—up to 573,000 lbs; but the husky G-E locomotives are brim full of get-up-and-go. They have the power and the pull to get the job done.

Five Standard Sizes

If you're using old steam or gasoline locomotives in your switching operations, you can expect to save thousands of dollars a year through slashed fuel and maintenance costs. G-E has five standard locomotive sizes, any one of which will probably pay for itself in three or four years. Have your nearest G-E representative survey your requirements, estimate your savings in advance. There's no obligation. Apparatus Department, General Electric Co., Schenectady, N. Y.

LOW FUEL COSTS

Diesel-electric locomotives burn approximately one gallon of fuel oil, where a steam locomotive burns one hundred pounds of coal. This is one reason why G-E switchers often pay for themselves in three or four years.

Switch to Diesel-electrics *And Save!*

GENERAL ELECTRIC

120-41

new machinery and supplies

PIT AND QUARRY

● Giant Mobile Crane

A spectacular advance in mobile equipment for handling heavy materials, which makes possible the lifting and transporting of loads heretofore beyond the capacity of such equipment, is signalized by announcement from Thew Shovel Co., Lorain, Ohio, of the giant, rubber-tired, two-engined "Moto-crane," said to be the world's largest.

This new Thew development, designated the Lorain MC-820 "Moto-Crane," has a safe-rated lifting capacity, on outriggers, of 45 tons at a 12-ft. radius. It weighs 65 tons and has the following overall dimensions: length, with boom in travel position over front of carrier, 66 ft., 5 in.; width, outside to outside of tires, 11 ft., 7¾ in.; height with gantry erected, 19 ft., 5 in.; with gantry lowered, 14 ft.

The MC-820 comprises two basic components: the carrier, or rubber-tired mounting, which transports the unit from place to place; and the turntable, or revolving superstructure, which is attached to the carrier frame. The carrier has a weld-fabricated frame with multiple straight-beam construction for side members. Outriggers are of the telescopic type, one amidships and one across the rear of the carrier frame.

The Moto-Crane is equipped with two Waukesha diesel engines, one (225 hp.) furnishing power for propulsion of the carrier, the other powering the turntable mounted on the carrier.

The Fuller transmission, mounted behind the engine, provides a range of five forward speeds and one reverse speed. From a Timken-Detroit power divider equally divided power is transmitted by separate propeller shafts to each of the two driving rear axles.

The front axle is a dead, non-driving axle of the heavy tubular type, mounted on heavy-duty type springs equipped with helper springs. Front-wheel steering is accomplished by a combination of Ross heavy-duty cam and twin-lever manual steering aided by Bendix Westinghouse air-assist steering applied to each wheel.

The turntable or superstructure is mounted on the carrier with the center of rotation just ahead of the forward rear axle. At full-load speed, the turntable engine is rated at 164 horsepower. Power from the engine is transmitted through a Twin Disc hydraulic coupling.

The crane boom is of all-welded design with bolted butt splices. Standard booms are 50 ft. in length, made up of 25-ft. bottom and top sections. Center sections are available in 5-, 10-, 15-, 20- and 25-ft. lengths. These may be used to give a maximum boom length of 100 feet.

● Crawler-Type Truck Tracks

Truck operators may now fit their hauling equipment with crawler type tracks. These conversion units, known as truck tracks, were formerly channeled to the armed forces. This winter, however, they will be available to private operators. The tracks may be fitted to single or tandem axle trucks equipped with most standard dual tires. Mounting the tracks is a simple operation which takes the driver about 10 minutes.

Pads are made of drop-forged steel alloy. Fitting is done by adding or removing pads and linkage. Every pad has a master adjustment to assure proper track tension. Connecting the pads is a cadmium-plated chain of heat-treated, high tensile steel. P. & G. Supply Co., 615 S. E. Market Street, Portland 14, Ore.

● New Hose Clamp

Breeze Corporations, Inc., 41 South Sixth Street, Newark, N. J., are the manufacturers of the "Aero-Seal" worm drive hose clamp for industrial applica-

tions. Originally designed for Army and Navy aircraft, the device employs a special 10-pitch hardened steel worm which engages perforations in the band, producing a true tangential pull to give belt-like tightening action and uniform clamping pressure all around the hose.

The worm drive principle permits the band to come through the worm housing, thus providing extra long take-up. The band may be backed completely out of the housing so that the clamp can be sprung open and installed over the hose in place. No lock wire is required, although a lock wire hole can be furnished in the thumb grip for sealing purposes if desired. There are no loose parts, since the worm is fully retained at all times by the riveted-on housing. The clamp is available in spring steel (fully cadmium plated) for all ordinary uses or stainless steel for applications where excessive corrosion may occur.

● Gear Lathe

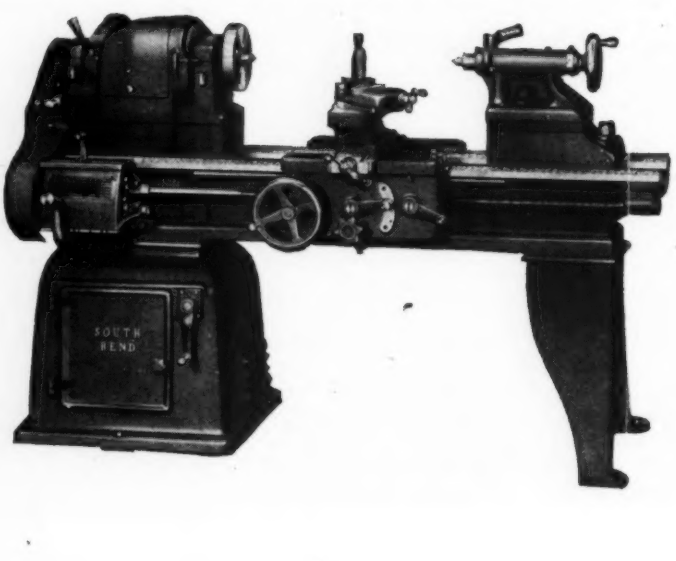
The South Bend 16/24-in. swing "Quick Change" gear lathe, designed for machining large-diameter, medium-weight work, has a maximum swing of 24¼ in. over bed and saddle wings, and a swing of 18¾ in. directly over the saddle. It is available with bed lengths of 6, 7, 8, 10 or 12 feet. The headstock spindle will take bar work up to 1⅜-in. diameter when using a universal chuck or collet work up to 1-in. in diameter when using No. 5 South Bend collets. Spindle speeds range in 8 steps from 12 to 477 r.p.m.

The range of threads and feeds for this lathe are as follows: 48 threads r.h. or l.h.—4 to 224 per in.; 48 power longitudinal carriage feeds—.0015 in. to .0841 in.; and 48 power cross-feeds—.0006 in. to .0312 in. Tailstock spindle travel is 5¾ in. and tailstock top set-over is one inch for taper turning.

This lathe may be equipped with a telescopic taper attachment which can be adjusted for accurate taper turning. The maximum taper is 3½ in. per foot (16½ deg.) and the maximum taper length is 11½ in. at one setting of the attachment. Many other attachmens are available. The South Bend Lathe Works, 156 E. Madison Street, South Bend, Ind.

● Protective Masks

G-S protective masks consist of a plastic shield, which is held in position by an adjustable elastic head band, and replaceable laminated filters of extra thickness. They protect throat, nose and bronchial tubes from larger particles of non-toxic dusts that irritate these membranes. Weight is less than ½ oz. G-S Masks afford thorough protection, except where fine silica dust, lead, arsenic and other toxic dusts are present. Effectiveness is readily seen by filter discoloration. General Scientific Equipment Co., 2700 W. Huntington St., Philadelphia 32, Pa.



● Industrial Precipitators

Exceptionally high "around-the-clock" efficiencies, not previously obtained, have been claimed in the recovery and/or removal of entrained solid or liquid particles from industrial gases with "Koppers - Elex" electrostatic precipitators, manufactured at the Koppers Company's Baltimore plant.

In all complete tests the new Koppers-Elex Precipitators have reportedly exceeded guaranteed efficiencies and in all cases efficiencies have been 95 percent. These are not efficiencies determined only during undisturbed precipitation, as was generally the case in the past. The tests of Koppers equipment cover full 24-hour periods, including operation when collected material is discharged from the electrodes.

Koppers-Elex precipitators are designed to meet specific requirements, and vary accordingly. Types include the following:

1. Units for precipitation and recovery for re-use of dry dusts from gases arising from kettles, mixers, dryers, conveyers, and grinding mills. The essential purpose of these precipitators is nuisance elimination, protection of plant equipment, and better working conditions.

2. A type for use in the process industries, for the removal and/or recovery of acid mist, oil refinery catalysts, salt cake or soda ash from burning black liquor in sulphate process, fluorides, aluminum hydroxide, carbon black, etc. (All elements recovered, except acid mist, have great value.)

3. A most important type of Koppers-Elex precipitator is offered for the removal of fly ash from power plant boiler gas. The main function of this unit is to abate nuisance and enable power plants to comply with strict municipal ordinances.

Actual tests of a precipitator, installed in an Eastern plant show gypsum recovery from calcining kettles as follows: volume of gas—4,500 c.f.m. for each of four. Tests on four precipitators show from 98.7 to 99.8 efficiency, whereas 97 percent efficiency was guaranteed.

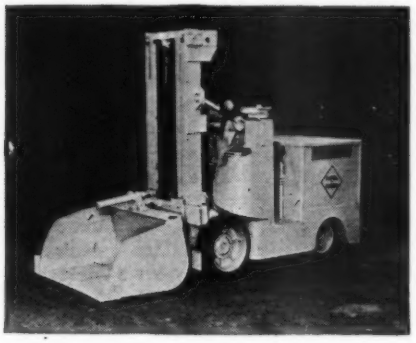
The Koppers-Elex precipitators for solid particle removal are designed for periodic rapping to discharge the dust from the collecting electrodes in a single gas lane at a time, with the dust required to fall a maximum of 26 in. before passing out of the gas stream. This reduces to a minimum the re-entrainment. Such rapping is actuated by clock-timer controls. The electrical power units for the precipitators are of two types—one known as the "Elex-Pak," and the other as the "Vac-Pak," for which no special substation is required. These are new and novel packaged power units for production of unidirectional high-voltage current.

Koppers Company, Inc., manufactures the precipitators under license from the Swiss firm Elex, S. A., employing their successful technique which has been used in many installations abroad.

● Combination Truck and Scoop

An electric power industrial truck equipped with a special type of scoop is announced by Elwell-Parker Electric Co., Cleveland, O. This is for picking up, transporting, delivery or piling loose materials used in many manufacturing and construction operations.

The scoop is attached to the truck's tilting and elevating mechanism, and all controls are centralized at the driver's station. A simple tripping device on



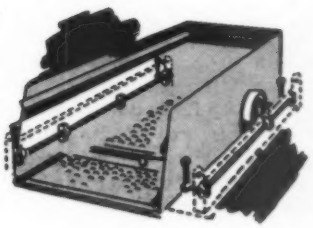
the scoop provides for rapid discharge of the load. It also has a pneumatic snubber to cushion impacts. When the scoop is lowered to floor level, it assumes its normal shoveling position. Providing for ready adjustment to local conditions, the upright column may be tilted forward 5 degrees from perpendicular. For safe carrying of the load and to avoid spillage, the upright column may be tilted backward 15 degrees from perpen-

dicular. Flexibility of the machine facilitates loading or emptying the scoop at floor levels or at any height up to 117 inches.

Capacity area of the scoop is 12 cubic feet; capacity weight of load is 2,000 pounds; and speed with load is up to 5½ m.p.h.

The combination of lift-truck and scoop is especially adaptable in plants or areas where bulk materials are handled, such as cement, coal, sand, etc. The scoop is interchangeable with a standard type fork, thereby adapting the truck at any time to a still wider range of time-saving, load-handling purposes.

No Shaky Screen Houses
with
SECO
VIBRATING
SCREENS

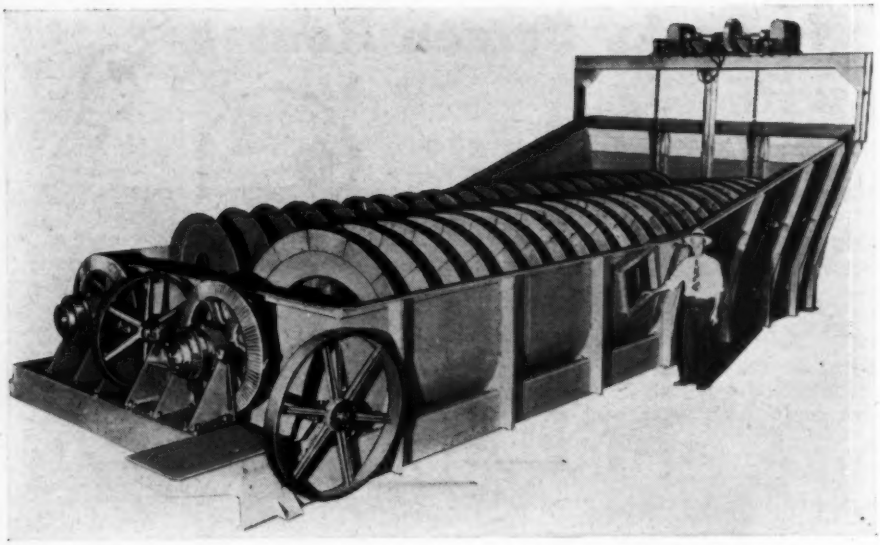


Smooth, efficient performance! That's what operators report with Seco Vibrating Screens. Note in the small illustration (outlined) Seco's Patented Equalizer Assembly. This sets up full control of the true circular action, under all load conditions. There's no bobbing or weaving—nothing to slow down the load. Just smooth, trouble-free screening! Get the whole Seco story! Prompt deliveries now being made.

Write Dept. L for A Guide to Better Screening

SECO

SCREEN EQUIPMENT COMPANY, INC.
PRODUCERS OF VIBRATING SCREENS EXCLUSIVELY
Buffalo 21, New York
In Canada: United Steel Corp., Ltd., Toronto



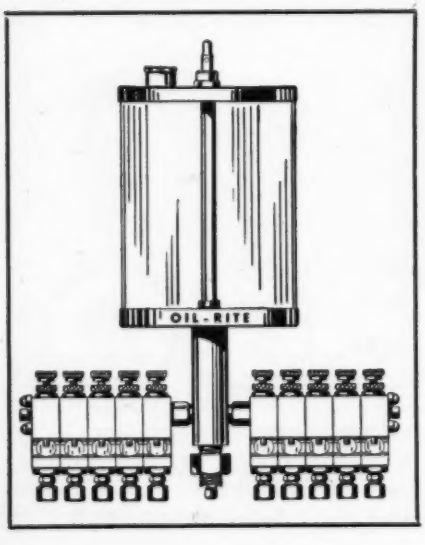
● Spiral Classifier

The 66-in. duplex double-pitch submerged spiral-type Akins classifier recently completed by the Colorado Iron Works Company, Denver, Colo., for the Davison Chemical Corporation is claimed by the manufacturer to be the largest of this type ever built. It will be used in the reclamation section of the Pauway No. 4 phosphate plant at Lakeland, Fla. The classifier is capable of raking over 200 long tons an hour. The tank is 31 ft. long, inside measurement, and each of the 66-in. dia. spirals weighs 8½ tons. The classifier is shown with gear guard removed to show the drive mechanism.

● Gravity Feed Oiler

Oil-Rite Corp., 3446 S. 13th Street, Milwaukee 7, Wis., offers its "Multiple" oiler for drop-feed oiling to multiple points. Oil is fed by gravity from a reservoir through gang-mounted sight-feed valves to a number of individual bearings. The device is designed to do the work of 2 to 24 individual oilers.

The shut-off lever on top of the oiler controls a needle valve which releases the oil to the sight-feed valves. The drop-feed control of each sight-feed valve allows independent regulation from full flow to a complete shut-off. Manufacturers state that hairline adjustments can be made and retained through the use of a friction screw.



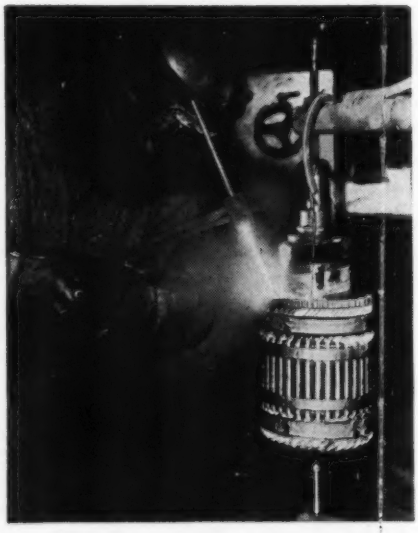
This oiler is very light because of its aluminum alloy body. Principal elements include a reservoir, a central mounting shank and a gang of sight-feed valves. The reservoir is usually of Lucite and is supported by top and bottom caps between two cork gaskets.

Standard models are available in five body sizes, with capacities ranging from 9 ounces to 1 gallon and up to 24 feeds.

● Copper-to-Copper Welds

Welding steel to steel has been an important factor for increasing strength of power industrial trucks. Now copper is welded to copper in assembling Elwell-Parker motors for these materials-handling huskies.

One cause of trouble with electric motors is overload, which overheats, melts and displaces the solder used to connect wire conductors in the armature. Instead of soldering, connections now are made at Ewell-Parker by carbon-arc welding—this while a stream of water is played on the metal to keep down the temperature. (The melting point of copper is three to four times higher than that of solder. It also is higher than the heat generated in an armature in severe service.)



In a 3- to 5-hp. motor as many as 65 separate welds are made, closely, evenly spaced. These connect the tips of the short lengths of wire conductors in the commutator bar neck slots, at both ends of the armature coils. All wires are insulated up to the points where they are joined after being assembled in the armature. Insulations must be protected from heat applied to melt the copper. This is accomplished by means of the water jet, led in a rubber tube to the parts near the electrode. Excess heat is localized and dispersed in the form of steam.

The welder works with both fire and water, balancing the two, as one moment the copper must be fluid, and the next solid. The armature is mounted vertically on its shaft on a work bench and the welder rotates it, bringing one spot after another into position.

Fiberglass and asbestos in threads and tape now are used for insulations. Glass- and asbestos-insulated field coils result in practically enclosed, fireproof motors. Elwell-Parker motors have no fuses; they are built to absorb all the current a truck's batteries will deliver.

● Giant Size Portable Crusher

New to the crushing industry is a "giant" portable primary crushing plant built by Pioneer Engineering Works, Minneapolis 13, Minn. This new plant, designated the No. 153 PR, has a 3042 overhead eccentric jaw crusher with a 42-in. by 4-ft., 3-chain apron feeder, mounted on a 3-axle chassis, equipped with 12 pneumatic tires—12.00x20. A 30-in. by 25-ft. built-in conveyor delivers the crushed material over the front end of the plant.

Standard equipment includes a bolster for the front wheels. This can be removed to permit the use of a semi-trailer hitch for moving, if desired. Hydraulic brakes on four rear wheels are optional.

The overall length of the plant is 40 ft. 6 in. Weight without the "on plant" power unit is approximately 79,000 pounds. Power required for operation is 125 hp., continuous.

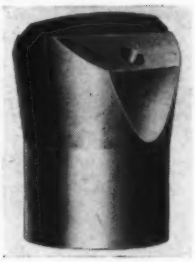
An interesting feature of this plant is the simplicity of design, which sharply reduces dismantling for moving. The feeder can be raised or lowered readily by means of two hydraulic rams actuated by a single Blackhawk pump.

● Log Washer

Ruggedness is the keynote of the new Eagle log washers. More massive logs and larger, heavier tubs are among the new features. Deeply chilled, semi-steel renewable shoes are mounted on steel feet attached to welded fabricated angle steel logs to give a 36-in. tip-to-tip diameter. The wearing surface is provided with corrugated sections to deliver a more severe scrubbing action.

Featured also are the bottom wash water inlets, hardened gears and Hydrotex marine bearings at the lower end and Timken roller bearings at the upper end to assure long-time, trouble-free service. These features are common to all types of Eagle material washers. Eagle Iron Works, Des Moines, Ia.

● Chisel-Type Rock Bits

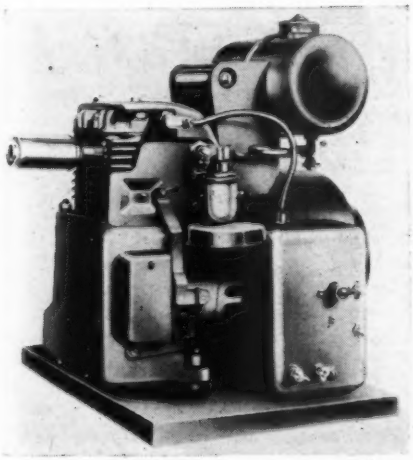


Kennametal, Inc., Latrobe, Pa., has announced the development of a new series of chisel-type rock bits which can be screwed on standard drill rods. These new bits are offered in the six sizes from 1⅜ in. to 2¼ in. The threads inside the body of the bit screw on steels that have F threads, H threads, and D threads, providing a shouldered contact between the bit body and the drill rod. The blade is held in the body of the bit by an exclusive method developed by Kennametal engineers for mechanical seating; and braze strains which may reduce the life of cemented carbide bits are eliminated by this method. Water ports in both bevels are provided to give positive circulation. According to the manufacturer, no conversion of existing equipment is necessary to use the bit.

The manufacturer states that increased drilling speeds can be obtained and the life of the bit ranges up to 100 times that of steel. With the new bit, drillers can drill any material, use the bit on light or heavy equipment, and use the same size bit continuously.

● Portable Electric Plant

Considered the smallest and lightest four-cycle, engine driven, a.-c. lighting plant ever developed, the new Onan Model AAE generates 350 watts alternating current, and is small enough (less than 2 cu. ft.) to fit easily into the trunk compartment of an automobile.



This easy-to-carry little power plant makes it possible to have an a.-c. electric power supply practically anywhere, for any purpose.

Developed by D. W. Onan & Sons, Inc., Minneapolis, Minn., this new series of AAE plants is available in both 115-volt a.-c. models and in 6-, 12- and 32-volt d.-c. battery chargers. Model 03AAE develops 350-watt, 115-volt a.-c., while the battery charging models are available in 300 and 400-watt capacities. All models have electric push-switch starting, and all are powered by 4-cycle air-cooled Onan engines.

A Touch of the Christmas Spirit is Never Out of Place . . .
We always look forward to Christmas. It's "open season" for being friendly and human and helpful. Our greatest joys are the friendships we have made among Owners and the teamwork we have developed in our own organization. To some of you this is our first Christmas greeting; to others it is our thirty-fourth. It is the same Merry Christmas to you all.
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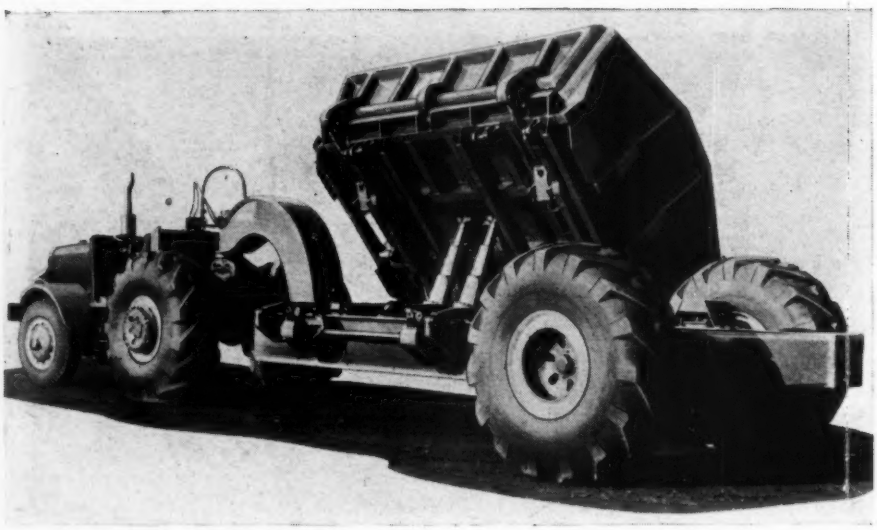
COAL · GRAIN · LIQUIDS
STORAGE
HANDLING EQUIPMENT
THE NICHOLSON CO.
CONSTRUCTION
CEMENT · OIL · CHEMICALS
10 ROCKEFELLER PLAZA
NEW YORK 20, N. Y.
"Bin Building Since 1914"



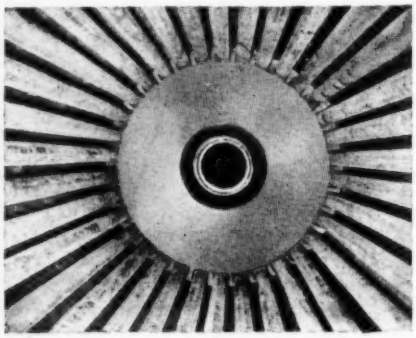
● Side-Dump Earthmover

Model FDT-98W side-dump Euclid is the most recent addition to Euclid's line of off-the-highway earth-moving equipment. The trailer body is of heavy welded construction for hauling rock and for heavy excavation. It has a payload capacity of 40,000 lbs. and a struck measure capacity of 13 cu. yds. Down-folding sides open automatically by mechanical linkage when the body is raised by the Euclid hydraulic twin hoists. Either right or left side dumping can be selected by the operator according to the job requirements.

The Euclid tractor is powered by a 200-hp. diesel engine and provides a top speed loaded of 33.4 m. p. h. Tires on drive and trailer wheels are 24.00x25 for good traction and flotation on soft fills and waste banks. Ability to dump the load non-stop over the bank or edge of the fill makes this unit extremely versatile for mine, quarry and other off-the-road hauling of heavy material. The Euclid Road Machinery Co., Cleveland, Ohio.

● Rubber-Lined Mills

Extensive experimentation and research led the staff of W. W. Gibson, 246 Market Street, San Francisco, Calif., to



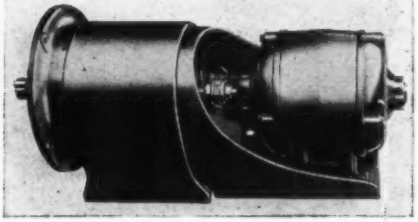
design and perfect rubber-lined classifying ball and rod mills—in reality, carbon-manganese steel bars cushioned against rubber liners. The rubber serves to reduce the wear of the pounding balls and abrasive material upon the steel rods. The liners are said to give several years of steady grinding service.

In these mills there are no bolts protruding through the shell; the bars are held against the rubber with steel wedges adjusted from the outside. (The Gibson ball mill has its carbon manganese bars placed farther apart than in the rod mill, so that they will cascade the balls with the least amount of creeping.) Both types of mills are made in 25-, 50-, and 100-ton capacities.

● New Motor Reducer

The Falk Corporation, 3001 W. Canal Street, Milwaukee, Wis., announces a new line of all-steel "Motoreducers." The housing, designed to reduce the danger of accidental damage, is lighter and stronger than those of earlier types, the manufacturer states. It is equipped with a newly developed dirt-proof and moisture-proof seal which protects gears and bearings.

This Motoreducer retains a conservative horsepower rating, to assure trouble-free operation of all units. Shaft diameters have been increased to provide greater torsional strength and consider-

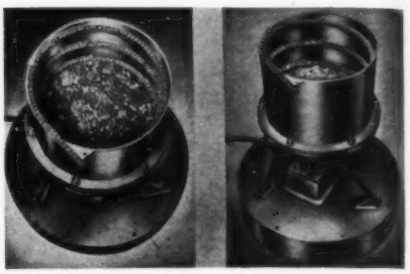


able increase in overhung load capacity. These reducers are used to drive mixers, agitators, conveyors, pumps, dust collectors, screens, classifiers, shot blast equipment, and related machinery.

● Bowl Feeders

A unique method of applying electromagnetic vibration to a bowl container produces a circular traveling and climbing motion of small pieces, parts, or bulk powders, etc. By having a grooved track ramp up on the inside of the wall of the bowl, these small pieces can be fed one at a time, in single file, in a predetermined manner to a machine, to package, for inspection, for counting, etc.

Speed of feed and starting and stopping of flow can be readily controlled.



The size of the piece to be handled, particularly the length, determines the arc of the grooved track, consequently, the size of the bowl. It can be operated from 110, 220 or 440 volt a.c. current. Syntron Company, 375 Carson Avenue, Homer City, Pa.

● Portable Sizing Plant

The Universal Engineering Corp. of Cedar Rapids, Ia., announces the addition to its line of crushing equipment the Model 1800 secondary stone plant for production of agricultural lime-dust and road rock. It consists of a Universal hammermill on a truck, together with a double-deck vibrating screen, Rotovator, conveyors, hoppers and drives necessary for a complete and balanced secondary crushing, screening and loading plant.

Material from any standard primary crusher goes directly to the screen, where finished aglime and road rock are screened out. Oversize is delivered to the hammermill. The output of the mill is returned to the main conveyor by means of an under conveyor and Rotovator wheel and back to the screen.

Power is applied to the side of the plant through a universal joint to a special roller-bearing-mounted back shaft.

The Model 1800 is available with three sizes of hammermills, with aglime capacities from 20 to 75 t.p.h. and road stone from 50 to 125 t.p.h.

trade notes

International Paper Company's Bagpak Division has opened a branch sales office in San Francisco, with W. A. School as district sales manager. It will be Bagpak's second branch sales office in California. The other office is located in Los Angeles, with Frank N. Gladden as district sales manager.

Appointment of F. A. Maskell as sales representative of the New York Belting & Packing Company was announced today by B. F. Reuther, sales manager of the company. Mr. Maskell will cover Colorado, Utah, Arizona, and New Mexico. He will make his headquarters in Salt Lake City.

B. F. Bilsland has been promoted from manager of the Allis-Chalmers Chicago district to manager of the company's newly formed Midwest region, according to an announcement by J. L. Singleton, vice-president and director of sales of Allis-Chalmers general machinery division.

J. C. Collier, who has been employed by Allis-Chalmers since 1916, succeeds Mr. Bilsland as Chicago district manager.

The first annual sales meeting of the Multiwall Bag Division of the St. Regis Sales Corporation, subsidiary of St. Regis Paper Company, was held in the Hotel Waldorf-Astoria in New York on September 23 and 24 and brought together sales personnel of this division of the company from all sections of the country.

In two days of extensive presentation and discussion, broad consideration was given to the return of more normal competitive conditions and how they should be met, to technical developments and to research in the company's engineering and machine division which is resulting in new packer types.

Dell W. Savage has been named Eastern sales manager with headquarters in New York, in one of a series of major appointments announced today by The Thew Shovel Co., manufacturers of power cranes and shovels. Mr. Savage's territory includes New York, Long Island, New York state, Northern New Jersey and Connecticut.

Robert T. Maynard, formerly export manager for The Osgood Co., will succeed Mr. Savage and assume the additional assignment of collaborating with M. B. Gerber, Thew's export manager.

The appointment of Joseph F. Beles as district sales manager of the North Midwest Territory was also announced. Mr. Beles was formerly associated with R. G. LeTourneau, Inc. and the Heil Co.

Kenneth Williamson has been named district sales manager for Arizona, Colorado, New Mexico, Utah, Wyoming, and parts of Idaho, Montana, and Nebraska for the Osgood Co. and the General Excavator Co., Marion, Ohio.

Mr. Williamson will supervise the sale and servicing of Osgood and General power shovel and materials-handling machinery in this area. He is making his headquarters with the Power Equipment Corporation of Denver, Colo.

Russell Runyon has been put in charge of purchasing at the Hazleton, Pa. plant of Oliver United Filters Inc. (New York, Chicago, Oakland), manufacturers of industrial filters and pumps. Mr. Runyon has been connected with the company's purchasing department in the Oakland, Calif., plant since 1936.

CUT COSTS!

ON PIT LOADING...

with MM MINNEAPOLIS-MOLINE MODERN MACHINERY

6 Forward, 6 Reverse Speeds

Is this what you want in pit-loading equipment?... *in Maneuverability?... in Big Capacity?... in Easy Handling?* If the answer is "yes", see how you can cut costs with the MM "UTIL". It has 6 forward and 6 reverse speeds—18:00-26 rear tires for extra flotation—10,000 lb. front-end capacity—special heavy Ross steering gear. These and many other features equip MM industrial tractors for *fast, profitable, easy handling* on front end loader jobs.

MM Industrial Tractors are famous for the same *dependable, economical* performance that has made MM Power Units the choice for powering crushers, pumps, screens and conveyors. MM Power Units range in size from 25 to 230 HP.

See Your MM Dealer Distributor or Write

MINNEAPOLIS-MOLINE
POWER IMPLEMENT COMPANY
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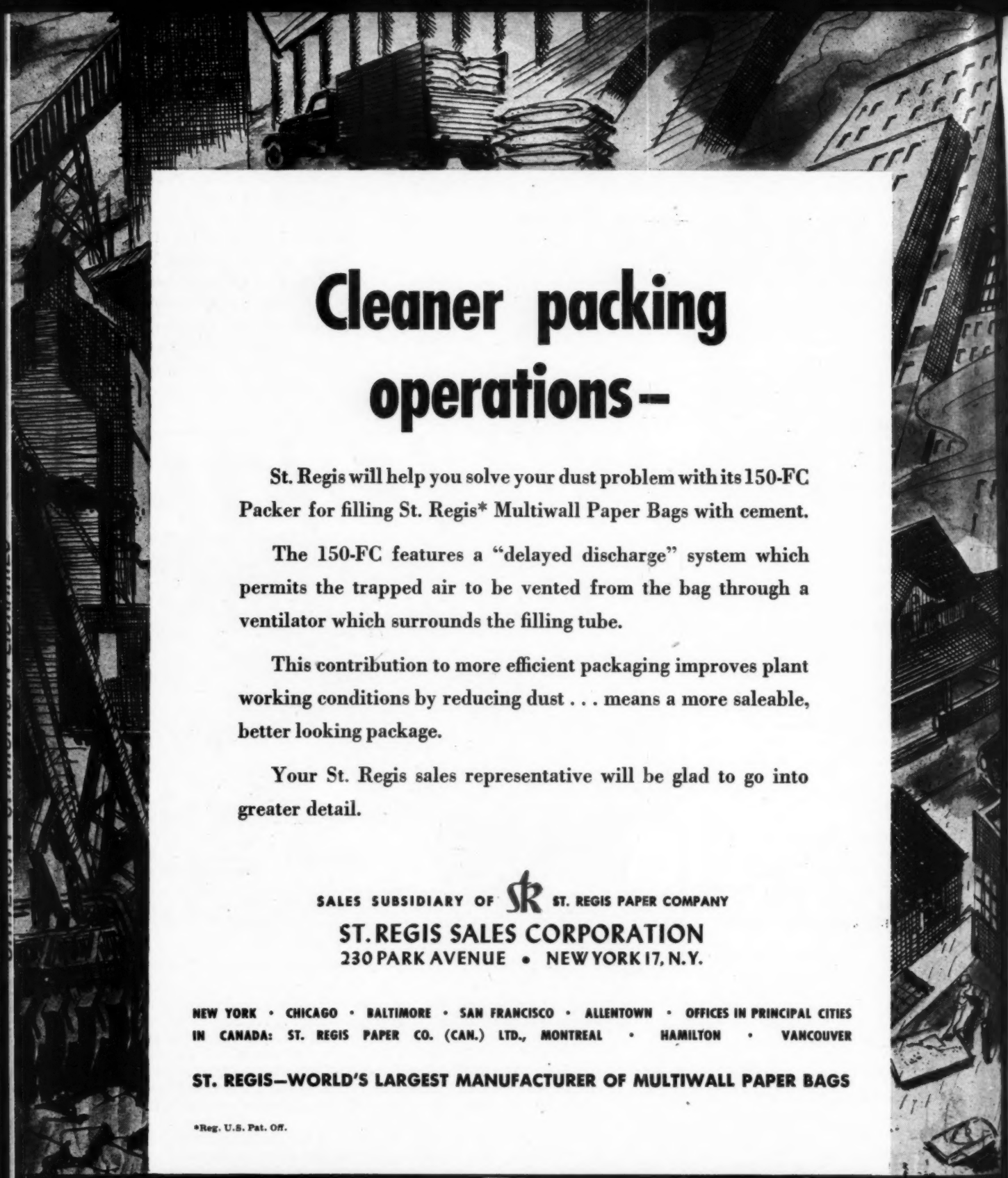

Cleaner packing operations—

St. Regis will help you solve your dust problem with its 150-FC Packer for filling St. Regis* Multiwall Paper Bags with cement.

The 150-FC features a "delayed discharge" system which permits the trapped air to be vented from the bag through a ventilator which surrounds the filling tube.

This contribution to more efficient packaging improves plant working conditions by reducing dust . . . means a more saleable, better looking package.

Your St. Regis sales representative will be glad to go into greater detail.

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ST. REGIS—WORLD'S LARGEST MANUFACTURER OF MULTIWALL PAPER BAGS

*Reg. U.S. Pat. Off.

ST. REGIS PACKAGING SYSTEMS

G. C. Delp

George C. Delp, president of the New Holland Machine Company, has been elected a vice-president of The Sperry Corporation. (The New Holland Machine Company, a leading manufacturer of farm machinery, has been a subsidiary of The Sperry Corporation since September, 1947.)

Mr. Delp is also president and general manager of the New Holland Machine Division of The Sperry Corporation; vice-president of Hertzler & Zook Division of Sperry, Belleville, Pa., an executive partner in State Equipment Company, Harrisburg and Kingston, Pa.; and a director in Lustron, Inc., Cleveland, Ohio; Vulcan Machine Company, Waynesboro, Pa., and Dellinger Manufacturing Company, Lancaster, Pa.

D. G. Savage

Don G. Savage, vice-president and general sales manager of The Thew Shovel Co., Lorain, O., and one of the nation's foremost authorities on heavy equipment sales, died recently of a heart attack at his home in Lorain. He was 50 years old.

Ironically, death came only 10 days after his elevation to the vice-presidency of the power shovel and crane manufacturing firm. He had suffered his first attack two weeks earlier but appeared to be recovering.

The Straub Manufacturing Co. of Oakland, Calif., recently concluded arrangements with Tutt-Bryant Pty., Ltd., of Rydalmere, New South Wales, Australia, for the exclusive manufacture and sale of the Straub line of Kue-Ken and Simplex crushers in Australia and New Zealand.

Robert J. Russell has been elected secretary of the Hardinge Company, Inc. nd also chief of the firm's technical f. He will assume responsibility for inating all equipment application cements for all the industries to Hardinge sells.

Miller and Jack R. Koske elected members of the board sales supervisors of the Eutec- g Alloys Corp.

ller has been appointed Eutec- al sales supervisor in the Mid- ion of the United States. For- Eutectic field engineer, Mr. Koske will supervise sales in the East Central section of the United States.

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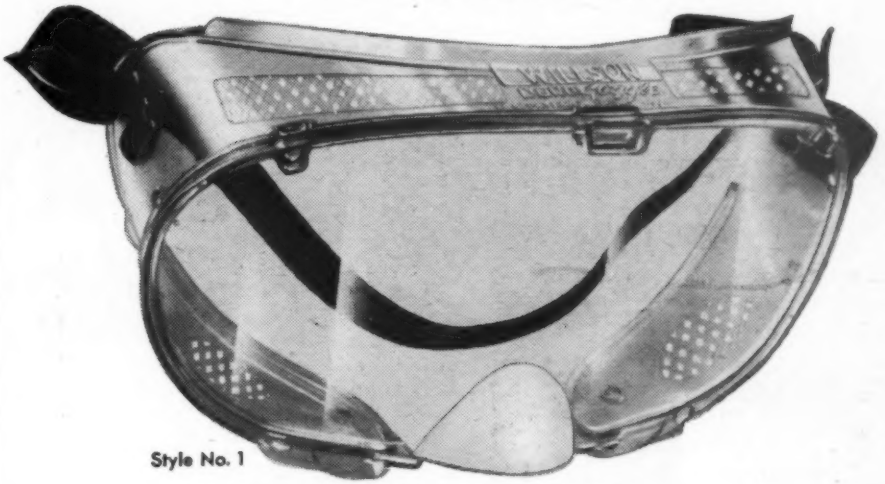

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When the 5000th Model E "Quick-Way" truck shovel rolled off the assembly line in Denver, Colo., the event marked a 29-year milestone in the history of truck-mounted power shovels.

The first truck-mounted shovel built was a "Quick-Way," developed to whip mountain road construction problems in Colorado. The design was originated in 1919 by Luke E. Smith, now president of the company.

M. L. Noel, vice-president and general sales manager of the Allis-Chalmers Tractor Division, has announced the appointment of Richard M. Stone as industrial sales manager, and E. G. Kull-

R. M. Stone

E. G. Kullmann

mann as assistant general sales manager. Mr. Stone will succeed William J. Faulkner, who has resigned to become vice-president and part owner of Frantz Tractor Company, A-C's New York dealer.

Mr. Stone joined Allis-Chalmers in 1928 and was soon made repair parts manager of the company's Fargo, N. D., branch. A year later he returned to the Milwaukee office as supervisor of repair parts for the Tractor Division. In 1935 he became industrial sales manager of the company's Peoria branch. In later years he served as Northwest Territory manager, and in 1943 he was appointed assistant manager of the Tractor Division's export department. On his new assignment Mr. Kullman will undertake for the entire Tractor Division duties similar to those he has been handling as assistant industrial sales manager since 1939. He joined Allis-Chalmers in 1928 as industrial collection manager for the Tractor Division.

Ralph M. Hoffman, president of Link-Belt Company, Pacific Division, San Francisco, has been elected a vice-president of the parent Link-Belt Company.

R. M. Hoffman

Mr. Hoffman joined the predecessor of the Pacific Coast Company—Meese & Gottfried Company—in 1913.

Mr. Hoffman has served in many important executive capacities in both the parent and subsidiary companies. He continues president of Link-Belt Company, Pacific Division, the position he has held since 1943.

National Bearing Division of the American Brake Shoe Company announces the opening of its new non-ferrous foundry—the newest of Brake Shoe's six postwar plants—at Meadville, Pa. Having closed four old plants in the National Bearing Division, the company is concentrating production for the Eastern area in the new Meadville foundry.

In full production, the new foundry will greatly exceed the combined productive capacities of the four old plants. It will provide complete machining facilities which were not available in any of the old plants.

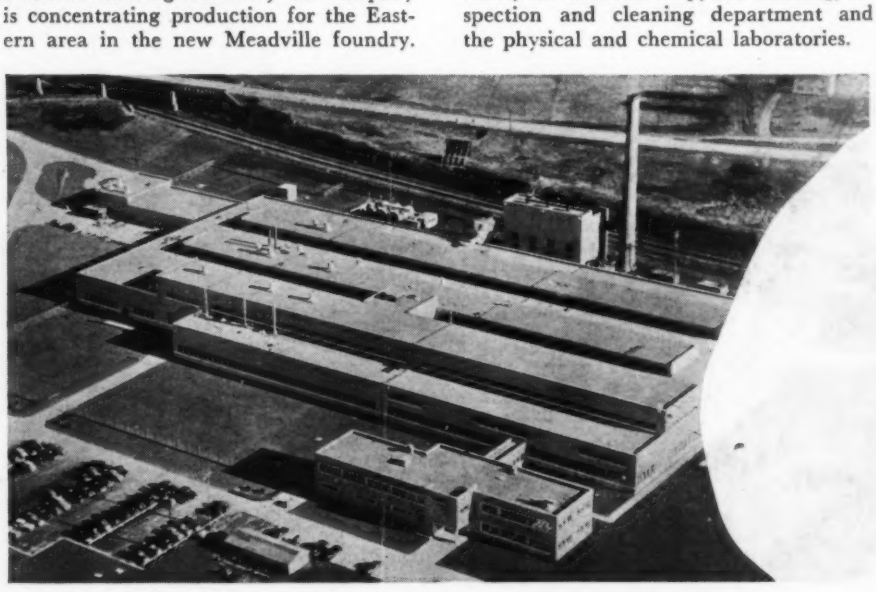
The new plant has a total of 185,245 sq. ft. of floor space, or the equivalent of nearly 4½ acres, under one roof. This includes a two-story office and employee service building, the main foundry building and machine shop, and a heating plant housed in a separate unit. All construction is of brick, concrete and structural steel.

Aside from the great size of the plant itself (over 400 square feet per employee) and its labor-saving equipment, the visitor is particularly impressed with the tunnels, pipes and conveyor systems for sand-handling, dust-collecting equipment for ventilation, and the even diffusion of light to all parts of the building. Fluorescent lighting is used in the machine shop and incandescent lighting elsewhere.

The ventilating system is so designed that some areas of the plant have as many as 8 changes of air a minute—others a change of air every 10 or 15 minutes, depending on the need. Air is cleansed by a dust-collecting system of the wet-collecting type. Dust-laden air from sand-handling equipment and also air from chipping benches and grinders is collected and exhausted into the outside atmosphere by two wet-collectors which have a capacity of 65,000 cu. ft. of air per minute. This air is not recirculated.

The plant has 20 power ventilators in the roof to remove smoke and gases from melting furnaces, the pouring floor, etc. These ventilators exhaust about 450,000 cu. ft. of air per minute.

Departments include the mechanical sand-handling facilities, the core room, the molding department, the furnace room, the centrifugal casting department, the phosphorous room, the reclamation room, the machine shop, the finishing, inspection and cleaning department and the physical and chemical laboratories.



•The new foundry of American Brake Shoe Co. at Meadville, Pa.

legal decisions

By LEO T. PARKER

Recently a reader wrote a letter in part, as follows: "Is it necessary to pay executives wages, overtime, etc., specified by the Fair Labor Standards Act? What employees are considered executives?"

The answer to this question is no. Nevertheless, according to a recent higher court an employee who performs work with his hands never is an executive. In other words, one who does manual work is *not* an executive.

For example, in *Kerew v. Emerson Corporaton,* 76 Fed. Supp. 197, the testimony showed that one Kerew was employed as an associate engineer. His wage was fixed in writing at $60 per week. Kerew's work consisted of building apparatus. In performing that work Kerew worked with his hands. Later Kerew was promoted to a field man. Part of his job was to see that production at the plants of sub-contractors was maintained at the proper standard required by the specifications. Also, he acted as an inspector. Kerew sued the employer to recover back wages, overtime, lawyer fees, etc., under the Fair Labor Standards Act.

The employer argued that Kerew could not recover compensation based on the Fair Labor Standards Act because he was an executive. The higher court refused to agree with this argument and held the employee entitled to a favorable verdict. The court said: "It seems to me that the services he rendered during that period, while he was engaged in the engineering department were services which are covered by the Fair Labor Standards Act. . . I am satisfied that the plaintiff (Kerew) was not engaged in an executive capacity."

Statute of Limitations

Modern higher courts consistently hold that a suit for damages must be filed within the period specified by the state's Statute of Limitation, or the suit cannot be maintained and the complaining party will *not* be awarded damages.

For example, in *Cleage v. Jackson Quarries,* 194 Pac. (2d) 843, one Cleage sued the Jackson Quarries to recover a commission of 2 cents per ton for crushed rock to be furnished by the quarry on the Grand River Dam.

The higher court refused to hold Cleage entitled to a recovery because he did *not* file the suit within the period prescribed by a state law, which required such suits to be filed within 4 months.

Nuisance Abated

It is well established law that the higher courts will abate a legal nuisance. Also, the court will award damages to nearby property owners whose comfort, health and welfare has been "greatly impaired."

For example, *Davis v. Palmetto Quarries Company,* 48 S. E. (2d) 329, the testimony showed facts, as follows: The Palmetto Quarries Company had for many years operated a stone quarry. Just recently owners of property in the vicinity of the quarry filed suit and asked the court to award them damages and compel the quarry company to stop operating its quarry as a "nuisance." The property owners alleged that the quarry company and "its employees have negligently, carelessly, recklessly, wantonly and wilfully

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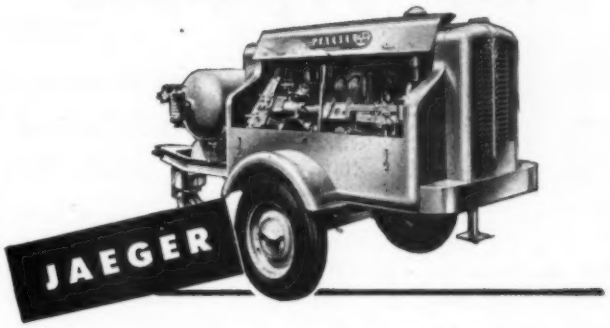

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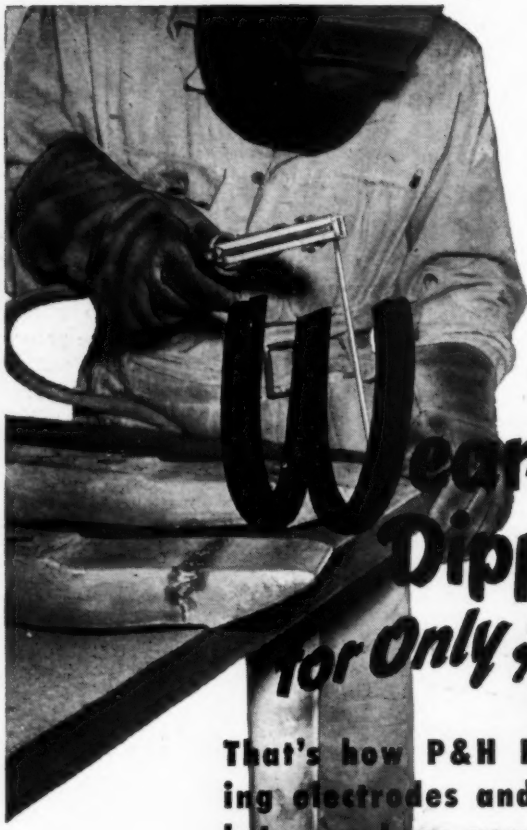

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managed, supervised, maintained, controlled, used and operated the quarry in such a manner as to cause and still cause vibration of the earth to take place, and stone, dirt, dust and other substances to be thrown on their premises, and great noises to continue at frequent intervals, and has maintained a nuisance."

The higher court listened to the testimony and decided that if acts of the quarry company constituted a legal nuisance, the property owners were entitled to recover damages and the quarry company must abate the nuisance, although the property owners delayed many years in filing the suit.

Low Bidder Gets Contract

According to a recent higher court a restriction in a specification is void which requires that the contractor who submits a low bid must have his plant specially located.

For example, in *Armstrong v. City of Trenton,* 59 Atl. (2d) 807, it was shown that a municipality invited contractors to submit bids for paving a street. The specifications contained a requirement that the site of the successful bidder's asphalt mixing plant be within the city limits.

The higher court held this requirement arbitrary, discriminatory and stifling to competition, and therefore void. This court said: "The test is the reasonableness of the specification and reasonableness is to be determined by the actual effect, not by the intended effect that existed in the minds of the framers. . . The requirement that the site of the bidder's plant be within the city limits is unreasonable."

Also, see *Oakley v. Atlantic City,* 44 A. 651. This court explained that a contractor whose plant is located outside of the city limits and who is the *low* bidder should be awarded the contract although he is confronted with the bid of another contractor whose plant is located within the city limits but whose bid is higher.

Restrictive Contract

Considerable discussion has arisen from time to time over this important legal question: Is an employment contract valid which restricts employees from taking employment with competitors? The answer is yes, if the duration of the contract is not over two years, and no state law prohibits such contracts.

In *National Company v. Yavner,* 73 N. E. (2d) 744, it was shown that a company made an employment contract with a salesman. This contract contained a clause which provided that if the salesman ceased to be employed by the company he would *not* for the period of 12 months solicit business from customers served by the company.

In subsequent litigation the higher court held that such a contract is valid and enforceable.

It is important to know that laws in Oklahoma, California and North Dakota prohibit such contracts.

Transportation Furnished

It is well established law that an employer who furnishes transportation to an employee *is liable* for compensation

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payments or damages if the employee is injured during the transportation. Also, a new higher court decision holds that this rule of law includes employers who *furnish* motor vehicles to employees.

For example, in *Travelers v. McCown*, 206 S. W. (2d) 663, it was shown that a corporation furnished an automobile to an employee and paid the upkeep, and also furnished oil and gasoline.

One morning the employee attempted to start his automobile. The morning was very cold and the line and fuel pump on the car had frozen. The employee was burned while attempting to start the car with a torch. He sued for compensation, claiming that the injury arose from "the scope of his employment." The higher court held that the employee could recover compensation under the State Workmen's Compensation Act.

Of course, this rule of law is *not* applicable where the employee sues for damages instead of compensation under the State Workmen's Compensation Act. *No damages* will be awarded unless testimoney proves that the employer *negligently* caused the injury.

See *Wright v. Longhorn Corporation*, 202 S. W. (2d) 285. In this case an employee sued his employer for damages for injuries resulting from an automobile collision. The higher court refused to hold the employer liable because the employee failed to prove that the injury resulted from negligence of the employer.

Illegally Discharged

According to a recent higher court an employee who is hired for a definite period may sue and recover heavy damages from his employer who breaches the employment contract.

In *Magness v. Madden*, 207 S. W. (2d) 714, one Madden sued to recover damages for breach of a contract of employment. Madden proved that he was employed as manager for a term of five years at a salary of $350 per month. The contract was in writing and signed by the parties. Madden entered upon his duties on July 1 and continued until November 3, when he was discharged. He sought damages from his employer in the amount of $8,000.

The testimony showed that Madden was unable to obtain employment for *twelve* months after his discharge, and he spent $700.00 looking for employment. In holding Madden entitled to recover $8,000 damages, the higher court said: "It would not be reasonable to suppose that it was intended that the appellee (employer) should have the right to terminate the contract at will, and thus to imperil the interests of his principal."

Falls Out of Bed

A recent higher court held that an injured employee may recover compensation for additional injuries received while being treated for an original injury sustained within the scope of his employment.

For example, in *Pond Creek Company v. Santos*, 212 S. W. (2d) 530, it was shown that an employee named Santos fell and was injured while working as a sand dryer. He was taken to a

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hospital. The examination of the attending physician disclosed several fractured ribs, a punctured lung, and severe shock. Three days after entering the hospital he either stepped out of his bed or fell from it. The following day more X-rays were taken, and it was found that the right hip was fractured. Santos is now permanently and totally disabled, and this disability resulted from the fractured hip. Santos sued to recover compensation under the State Workmen's Compensation Act based on permanent and total disability.

During the trial it was argued that Santos could not receive compensation for the hip injury which he had sustained in the hospital. It is interesting to observe that the higher court awarded compensation based on permanent and total disability, saying: "Even if his hip was fractured when he fell from or beside his hospital bed, this occurred during his medical treatment at a time when he could not be held accountable for his acts, and as a direct and proximate result of the original injury suffered in an 'accident arising out of and in the course of his employment'."

Buyer Burns Up Pump

It is well established law that a seller who breaches a guarantee is liable in full damages to the buyer. Also, the buyer is liable to the seller for damage to the subject of the sale while it is in his possession.

For example, in *Price-Williams v. Maier,* 210 S. W. (2d) 499, it was shown that a dealer in used equipment sold a second-hand pump and a 13-ft. joint of pipe for $525. The bill of sale issued by the dealer stated that the dealer would deliver to the buyer "one 10-in. Layne Pump, and 110 ft. of column complete, and it is guaranteed to be in A-1 workable condition, for the sum of $525."

The buyer installed the pump and after trial found it not to be in A-1 workable condition. The buyer proved that the pump was caked with rust, its bearings were worn, the stuffing boxes were worn out, and water would come in and drown out the oil. On the other hand, the dealer proved that the buyer continued to use the pump after discovering its condition. The mechanic employed by the buyer testified that his employer continued to operate the pump in its worn condition, and *with knowledge that the pump was burning up* because he was trying to finish a job.

In subsequent litigation the higher court held that the buyer could *not* recover back from the dealer $525, the purchase price of the pump, and said: "Of course appellant (buyer) could not recover the value of pump would have had if he had not burned it up in the attempt to finish the job before it did burn up, and appellee (dealer) must be credited with the amount or extent of the damage which he (buyer) did to the pump in its improper use after knowing its defective condition."

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Statute of Frauds

Modern higher courts consistently hold that a seller cannot enforce a verbal sale contract if the contract price is more than $100. This law, known as statute of frauds, is applicable in various states. However, the seller can collect payment for equipment already delivered to the purchaser.

For example, in *Munzenmaier v. Quick,* 58 Atl. (2d) 378, it was shown that a seller sold to a purchaser $502 worth of equipment. The purchaser refused to pay. The seller filed suit and the buyer attempted to avoid responsibility by proving that he purchased the equipment under a verbal agreement.

During the trial the seller proved that he parted with possession of the equipment and it is still in possession of the buyer. In view of this testimony the higher court ordered the buyer to pay the amount due, saying: "In seller's action for price of equipment, although amount of price was within statute of frauds, the buyer received, possession and control of the equipment."

Steeplejack Injured

All higher courts agree that an injured independent contractor cannot recover compensation under the State Workmen's Compensation Act. Moreover, he cannot recover damages unless he proves that the injury resulted from *negligence* of his employer.

For example, in *Wills v. Lehigh Portland Cement Company,* 195 Pac. (2d) 574, it was shown that the Lehigh Portland Cement Company made a contract with a steeplejack named Wills to paint three cooler stacks at its cement plant. Wills owned and furnished all tools, equipment, rigging and ropes necessary for the job. He worked on the job as weather permitted and entirely according to his own plans and methods, and was not under control of the cement company. Hence Wills was an independent contractor.

One day a rope broke and Wills fell sustaining serious injuries. He sued the cement company for damages.

In holding the cement company not liable, the higher court said:

"The work of a steeplejack is a special profession. In doing the work he (Wills) used special rigging, which equipment he owned, and he had complete charge of the work; he was his own boss. . . . Appellant (cement company) cannot be charged with appellee's (Wills') failure to properly inspect the rope or with his negligence in exercising his own judgment and conclusion the rope remained adequate."

Independent Contractor

It is well established law that an independent contractor cannot receive compensation under the State Workmen's Compensation Act.

See *Luker Sand & Gravel Company v. Industrial Commission,* 23 P. (2d) 225. This court held that the test of whether an employee is an independent contractor and therefore excluded from the compensation act is whether the services rendered by him are supervised by the employer. If the employer cannot super-

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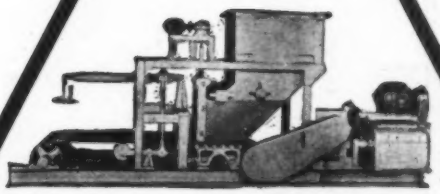

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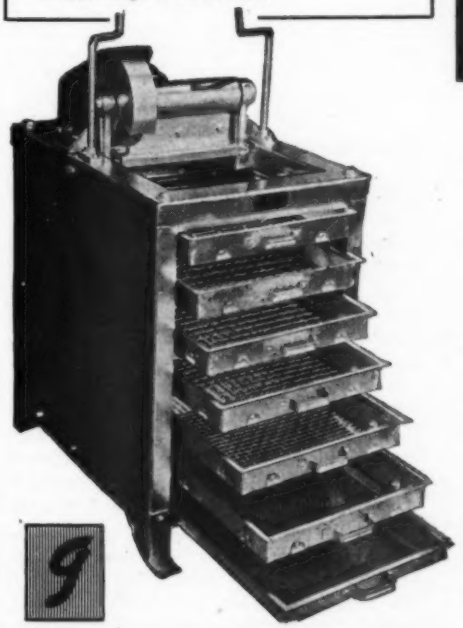

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vise the work and control the employee as to hours of work the emplyee is an independent contractor. Also, see *Sommerville v. Industrial Commission,* 196 Pac. (2d) 718.

Read Your Insurance Policy

A great majority of persons accept insurance policies without carefully reading them, and pay premiums for many years feeling secure against losses. Of course, if no loss occurs there is no occasion for worry. But if a relatively large loss occurs don't overlook the fact that insurance companies exert *every* effort to *invalidate* the policy and thereby avoid paying the loss.

For illustration, in *Ortiz Company v. National Insurance Company,* 75 F. Supp. 550, it was shown that a company held a fire insurance policy which contained a clause in which the company agreed to keep all its books and "the last preceding inventory duly locked under key in a fireproof safe in the night time and at all times" when the business was not open to commercial operations.

One night a fire destroyed the company's building and contents including the books, documents, invoices, cancelled checks, etc., relating to the business. The testimony showed that the company did not have an iron or fireproof safe.

In view of this testimony the court promptly held that failure of a company to comply with the above clause in the insurance policy entitled the insurance company to refuse to pay the loss. Also, this court held that failure of an insured to read his insurance policy is no valid excuse for failure to comply with its provisions.

Must Revise Zoning Laws

Recently a higher court held that before a quarry company purchases real estate it should *be certain* that no valid law restricts the real estate for residential purposes. Another important point of law is that a permit granted by public authorities in violation to a valid zoning law is void.

For illustration, in *Board of Adjustment v. Stovall,* 211 S. W. (2d) 303, the testinmony showed facts, as follows: The Interstate Company applied to the city building commissioner for a permit to operate its business on an 18½-acre tract of land. The permit was denied on the ground that most of the tract was zoned for one- and two-family residences, and not for commercial uses. Interstate appealed to the Board of Adjustment. This board granted the permit.

Nearby property owners appealed to the higher court, which held that in view of the city zoning ordinance the Board could not award a valid permit. Hence, the Interstate will have to select another location not zoned exclusively for residential purposes.

Other higher courts have held that if a company intends to operate its business on real estate restricted for residences, the company should first obtain *an option* to purchase the real estate and then, before completing the purchase, file suit to invalidate the zoning ordinance or have the court or city officials modify it.

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Rugged, efficient and economical, they're your best bet for satisfactory screening!

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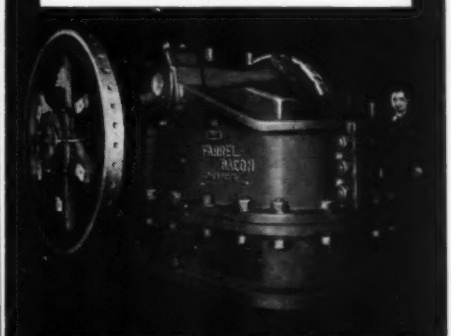
CRUSHER
has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1



FARREL-BACON
ANSONIA, CONNECTICUT

traffic news

CENTRAL FREIGHT ASSOCIATION

Docket 86230—Proposed to establish on stone, quarry waste, in open-top cars, minimum weight 90 percent of the marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Cecil, O., to Cement City, Mich., 105 cents per net ton (including ExParte 162-A and 166-B increases).

Docket 86231—Establish on limestone, agricultural, unburned, in bulk in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from North Vernon, Ind., to the following points:

	Net ton, including ExParte 162-A and 166-B increases
Barn Hill, Gilmore, and Owsley, Ill.	161 cents
Breman, Ill.	133 cents
Kenner, Ill.	155 cents
Olney, Ill.	144 cents
Pana, Shawneetown, Summerfield, Ill.	166 cents

Docket 86266—Established on stone, quarry waste, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Paulding, O., to Cement City, Mich., 105 cents per net ton.

Docket 86355 (2)—Proposed to establish a rate on limestone, ground or pulverized unburned, carload minimum weight 60,000 pounds from Marble Cliff, O., to Walton, Ky., 221 cents in open-top equipment and 266 cents in closed equipment.

Docket 86359 (2)—Establish on crushed stone, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply from Georgia, Ind., to Amos 166, Clear Creek 133, Elletsville 139, Gosport 144, Greencastle 161, Harrodsburg 127, Putnamville 155, Romney 172 and Wallace Junction, Ind., 150 cents net ton.

Docket 86361—Proposed to establish on sand, all kinds and gravel, in open and closed equipment, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Cleveland, O., to Defiance, O., 183 cents net ton in open-top cars, 210 cents per net ton in closed cars.

Docket 86368—It is proposed to establish on sand, all kinds and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Coshocton, O., to Newark, O., 103 cents net ton.

Docket 86403—It is proposed to establish on limestone, agricultural, unburned, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of the car, except that when car is loaded to cubical or visible capacity, actual weight will apply from Conneaut, O., to Jamestown, N. Y., 177; Shore Acres, N. Y., 166 cents.

Docket 86404—Stone fluxing, furnace or foundry, melting or refractory (unburned), in bulk, carload minimum weight 90 percent of marked capacity of car furnished except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Carey, O., and other stations in Northwestern Ohio Group, as named in Item 10101 CFA L tariff 218-N., to Royersford, Pa., 396 cents net ton.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-777—Agricultural limestone, carload, in open-top cars, from McCook, Ill., to Tremont, Ill. Present: Class or combination rate. Proposed: $1.17 per net ton, subject to X-162—and X-166 increases.

ITC 511-755—Crushed stone, carload from Ullin, Ill., to various L&N Railroad stations in Illinois. Present: class or combination. Proposed: to (representative):

Woodlawn	116
McLeansboro	124
Carmi	130
Dales, Broughton	124
Grayson, Brooklyn, Equality, Lawler, Junction, Ill.	132

To revise rates on sand and gravel from Cairo and Metropolis, Ill., to Junction, Ill., via I.C. Railroad, Eldorado, Ill., L&N Railroad to $1.32; present rate from Metropolis $1.10 and from Cairo, Ill., $1.16. Rates on sand and gravel from Cairo and Metropolis, Ill., to Carmi, Ill., via I.C. Ry., Eldorado, Ill., and L&N Railroad to be published as terminal rates only. All rates subject to ExParte 162 and 166 increases.

Docket IRC 511-766—Proposed to establish on crushed stone, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply from Joliet, Ill., to Tampico, Ill. Present: $1.62 per net ton, which includes X-162-A and 166-A. Proposed: $1.29 per net ton, not subject to X-162-A or X-166-B increases.

Docket IRC 511-765—Proposed to establish on agricultural limestone, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds, from

Fallings Springs, Illinois

To	Proposed	Present Class or Combination
Gilmore, Ill.	88	
Lakewood	99	
Beardstown	121	
Mill Shoals	88	110
Shawneetown	110	120

Rates subject to X-162-A and X-166-B.

Docket IRC 511-768—Proposed to establish on stone, crushed, or ground, chats, rip rap and rubble, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when loaded to full visible capacity, actual weight will apply, from Grafton, Ill., to stations on I.C. Railroad in Illinois:

To	
Springfield, Climic, and Waggoner, Ill.	124
Litchfield, and Marine, Ill.	111

Present: None in effect—Rates subject to X-162 and X-166.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1009—Stone crushed, coated with oil, tar or asphalt (asphaltum), not to exceed 5 percent, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full capacity, actual weight will govern. From Kansas City, Mo., to Bedford, Ia., Clarinda, Ia., $2.00; Bloomfield, Ia., $2.32 per ton of 2000 pounds.

Docket E-41-1011—Proposed to establish a rate of 280 cents per ton of 2000 pounds on crushed stone or rip rap, carload from Guernsey, Wyo., to St. Francis, Kan.

A REVIEW

To help you do a better job . . .

- ☐ No. 710-A Crushers and Pulverizers
- ☐ No. 785 Belt Conveyors
- ☐ No. 801 "What We Make"
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- ☐ No. 808 Drive Chains

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THE MARK OF EXCELLENCE

The Jeffrey trademark on equipment and replacement parts is your guarantee of mechanical efficiency in material handling and processing . . . your guarantee of fine workmanship and fine performance. Look for IT. (Reg. U. S. Pat. Off.)

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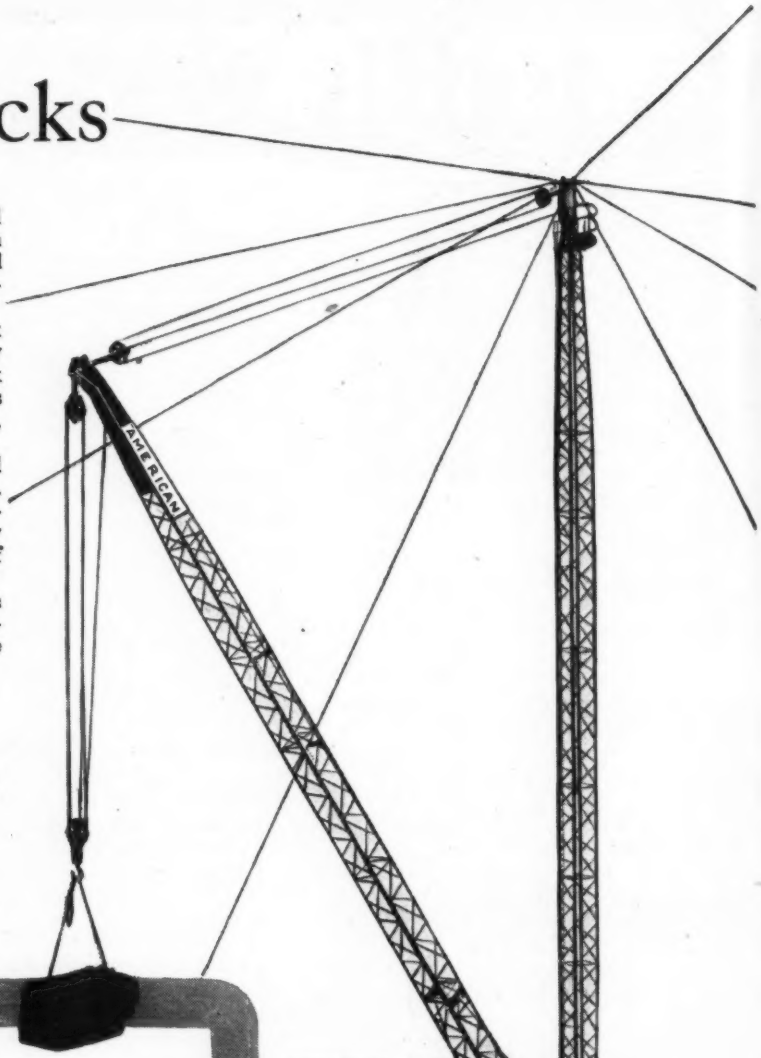
917-99 North Fourth St., Columbus 16, Ohio

Baltimore 2, Birmingham 3, Boston 16, Buffalo 2, Chicago 1, Cincinnati 2, Cleveland 13, Denver 2, Detroit 13, Harlan, Houston 5, Huntington 19, Jacksonville 5, Milwaukee 2, New York 7, Philadelphia 3, Pittsburgh 22, St. Louis 1, Salt Lake City 1, Scranton 3

You'll swing more deals

with American Hoists and Derricks



● When jobs are hanging in the balance, you'll feel mighty good about having AMERICAN equipment in your quarry. A big, strong AMERICAN derrick matched and teamed with a fine AMERICAN hoist is a combination that's virtually unbeatable.

First of all, your welded AMERICAN Guy Derrick has a real "boarding house reach". It is designed by engineers who have learned every trick in the book about achieving length and strength without excess weight. So you can buy a long boom . . . work a big, profitable area with fewest possible moves.

As to hoist power, there are no "ifs" involved when you use the AMERICAN unit recommended. You can know that the capacity is right, the performance is dependable, the first cost is economically correct, and that maintenance will be the least of your worries.

AMERICAN derricks, all steel, all welded, are in sizes from 3 to 250 tons. AMERICAN hoists in capacities from 2500 to 40,000 lbs. single line pull. Write for catalogs.

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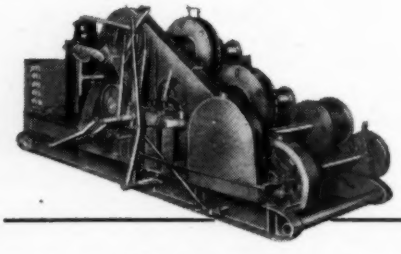


MODEL 140

ELECTRIC HOIST

2 drums with slewing attachment

A check list of **HOIST FEATURES** *for quarry operators*

●Here are a few design features that can make a lot of difference in quarry applications. Compare before you buy:

Chain Drive
delivers smooth, dependable power.

High Capacity Drums
handle plenty of rope, spool evenly without adding excess weight.

Anti-Fatigue Controls
are grouped and banked for easy finger-tip operation.

Compression Type Dogs
have never been known to break . . . a safety factor of great importance.

Welded Steel Frames and Beds
give more strength with less weight, withstand vibration.

Contracting Band Clutches
are smoothest, most efficient known. Easy to adjust, easy to maintain.

8202

NEWS OF CONCRETE MANUFACTURERS

Ivy H. Smith Heads S. E. Concrete Pipe Assn.—Peckworth on Program

Ivy H. Smith, president of the Sherman Concrete Pipe Company of Florida, was elected president of the recently formed Southeastern Concrete Pipe Association. Election took place during the association's first annual convention

Howard F. Peckworth
Managing director, American Concrete Pipe Assn.

at the Sheraton Bon-Air Hotel, Augusta, Ga., October 5 and 6.

Thirty-five members of the concrete pipe industry, as well as representatives of the cement and wire reinforcing industries, were present. They formulated plans for a permanent organization open to all concrete pipe manufacturers in Maryland, Delaware, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, and the eastern portion of Tennessee. First step toward the organization was taken during the 40th annual convention of the American Concrete Pipe Association held last March in New Orleans.

Other officers selected for a one-year term or until the next convention were Richard Carroll, vice-president, Sherman Concrete Pipe Machinery Company of Montgomery, Ala.; Henry O. Strohecker Jr., secretary, Carolina Concrete Pipe Company of Charlotte, N. C.; and J. D. Spottswood, treasurer, Sherman Concrete Pipe Company of Florida.

The board of the new regional association will be composed of one representative from each of the states in the Southeastern area. They will be elected for one-year periods by local members in each state. Thus, North Carolina members will elect a director to represent their state, as will each other state group.

After adopting a constitution and electing officers, the concrete pipe manufacturers heard addresses by Howard F. Peckworth, managing director of the American Concrete Pipe Association, Chicago, Ill.; S. N. Pearman, state highway engineer, South Carolina Highway Department, Columbia; and Harry W. Easterly Jr., production manager, Concrete Pipe and Products Company, Inc., Richmond, Va. The next convention will be held in October, 1949, in Birmingham, Ala.

N.R.M.C.A. Research Building To Be Completed Early in 1949

Construction has been started on the new quarters of the National Ready Mixed Concrete Association's research laboratory at the University of Maryland in Baltimore. Foundations have been poured and plans call for the completion of the building early next year.

Headquarters of the N.R.M.C.A. will be in the engineering laboratory building at the new Glenn L. Martin College of Engineering; the association will share its facilities and space with graduate research work in the field of concrete and concrete aggregates.

The Race Block Company of Memphis, Tenn., recently purchased the sole rights to manufacture and sell the National Pre-Cast line of precast steps, stoops, stairs, porches, etc., in Shelby County, Tenn. The transaction was handled by National Pre-Cast Sales & Service of Baton Rouge, La.

According to an announcement released by W. P. Siegert, president, and A. W. Devos, secretary, the twenty-ninth annual convention of the Wisconsin Concrete Products Association will be held at the Pfister Hotel in Milwaukee on January 20 and 21, 1949.

Coming Events

January 16-20, 1949 — Chicago. 30th annual meeting, Associated Equipment Distributors, Stevens Hotel.

January 31-February 3, 1949—Cleveland. Annual convention and exposition, National Concrete Masonry Association, Cleveland Auditorium.

February 14-18, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

Northeastern University Offering Lecture Course On Concrete Technology

Cement and concrete technology are being stressed in Northeastern University's new evening graduate engineering program in Boston, according to Dean William T. Alexander. A special staff of highly qualified men under the leadership of Prof. Emil A. Gramstorff will serve as instructors and lecturers.

Among the lecturers this winter are A. T. Goldbeck, engineering director of the National Crushed Stone Association, and Stanton Walker, director of engineering of the National Ready Mixed Concrete Association. The course will include the following subjects: manufacture and properties of portland cement, control of concrete materials, mix design standards, dynamic modulus of concrete, puzzolanic cements, intrusian Prepakt concrete, soil cement and other technology.

Buffalo Firm Adds Equipment For Production of Celocrete

Approximately $100,000 has been spent by the Economy Fuel & Supply Corporation, Buffalo, N. Y., for machinery and equipment to expand its production of Celocrete, a lightweight aggregate, at the Hanna Furnace Corporation's plant.

The expansion includes the installation at the Hanna plant of a second machine for converting surplus blast furnace slag into an insulating building material. The outlay also includes the purchase of such equipment as steel dump cars for handling the material.

The additional machine will nearly double the plant's output to turn out between 180,000 and 200,000 cubic yards annually, or enough to make between 8,000,000 and 10,000,000 blocks. With the one machine operated previously, the plant produced about 100,000 cubic yards of the aggregate a year.

A fire of undetermined origin caused damage estimated at $2,000 at the Rockford Cement Products Company's plant at Rockford, Ill. The block plant was destroyed, but another section and the offices were saved.

Charles A. Gates, who was for 26 years associated with the Lehigh Portland Cement Company's sales staff, retired from his duties on July 31, 1948. He represented the cement firm in northwestern Iowa.

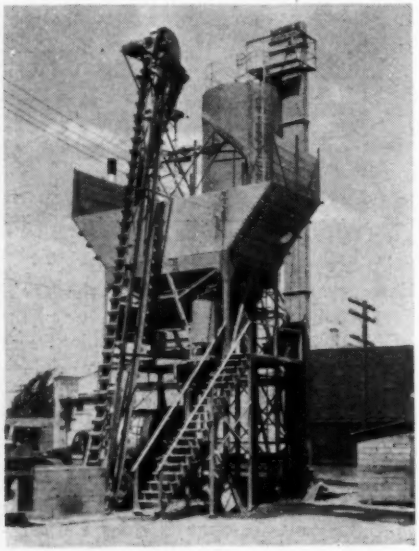
Spokane Firms' Subsidiary Serving Kennewick Area As Concrete Demand Soars

Kennewick, Wash., on the Columbia River in the southeastern part of the state, is the gateway city of the Hanford Atomic Energy Project. As its population has doubled and then trebled, the city teems with activity.

The construction industries in the Hanford area have been aided of late by the establishment of a modern ready-mixed concrete plant operated by Premix Concrete, Inc. The batching plant, manufactured and erected by the Noble Co., Oakland, Calif., is a semi-automatic unit of all-steel construction, complete with a 300-bbl. bulk cement silo. Elevators lift the aggregates and cement to their respective bins and a half-dozen Rex truck-mixers are charged at the plant. This Kennewick operation is a subsidiary of Spokane's largest aggregates and concrete producers—Union Sand & Gravel Co. and Central Premix Concrete Co.

Within the last year Union and Central have established a new combination sand-and-gravel and ready-mix plant near the eastern limits of Spokane. The aggregates plant has a capacity of 175 t.p.h. but the deposit is deficient in fines to the extent that a considerable tonnage of the finest fraction needed in making up specification sand has been shipped in for blending purposes. The company is seriously considering the addition of a rod mill at the plant to grind surplus pea gravel into sand, thus eliminating the present necessity of importing fines.

The Johnson concrete plant adjoining is equipped for both straight batching and pre-mixing. Not counting the truck-mixers in regular service at Kennewick, the Spokane company owns and operates 22 Rex units which are now being serviced in one of the finest garages in the industry. The garage and service building was built recently near the downtown Spokane distributing plant. On long-haul jobs out of Kennewick, requiring the delivery of large yardages, a part of the Spokane truck-mixer fleet may be transferred to Kennewick to help out during the rush.



• A view of the batch plant and bulk-cement silo recently established at Kennewick, Wash., by Premix Concrete, Inc.

• Two of the truck mixers, part of the Kennewick fleet.

W. M. Murphy heads the concerns; Herb D. Sullivan is vice-president and general manager; John W. Murphy is secretary-treasurer; and Stewart Kimball is general superintendent. Charles Noyes is in charge at Kennewick.

California Pipe Makers Convene To Consider Industry's Problems

THE fall meeting of the California Associated Concrete Pipe Manufacturers, held November 4 and 5 at the Mayfair Hotel in Los Angeles, attracted about 75 pipe producers and those with allied interests.

One of the high spots of the gathering was a talk by Howard F. Peckworth, executive secretary of the American Concrete Pipe Assn. He reported that concrete pipe is at the peak of popularity, with operators in the United States producing at capacity to turn out about 7,000,000 tons in 1948. This exceeds 1947 output by about 1,000,000 tons and 1949 looks as good, if not slightly better than 1948, he prophesied. Mr. Peckworth reviewed the growth of the national association, now in its 41st year, declaring that membership is at an all-time high. An extensive research program, in progress at various state universities under A.C.P.A. sponsorship, was outlined.

Allocations, priorities, and possibly price controls may return to plague industry, in Mr. Peckworth's opinion, and he warned the pipe men that reinforcing steel, particularly, is certain to be in extremely short supply in 1949. He praised the vigorous program of the California organization, declaring it to be the outstanding regional association in the concrete-pipe field.

Another speaker, Hugh Barnes, head of the Los Angeles office of the Portland Cement Assn., reported that about 600,000 bbls. of cement went into concrete pipe during the year in the southern California district. E. C. Fortier, district engineer for the Bureau of Reclamation, spoke on the progress being made on the Friant-Kern Canal project and traced the present and future network of irrigation pipelines involved. A. W. Rawn, chief engineer of the Los Angeles County Sanitation District, gave an interesting illustrated talk on the use of concrete pipe in the district's vast sewer system. He revealed that some of the early concrete pipe laid in the system, which is being replaced by larger-diameter lines to care for the increased population, is in such good condition upon being taken up that it is being re-laid in new secondary systems.

Proposed revisions in California Highway Dept. specifications affecting concrete culvert pipe were discussed and a committee was named to present recommendations to the proper state officials. Other industry problems, including the effect of the basing point decision on the pipe price structure, labor relations, and the addition of a section covering the preparatioin of working contracts to the association's popular publicatin, *The Design, Construction and Operation of Concrete Pipe Irrigation Lines,* occupied considerable time during the two-day sessions. The advertising program for 1949 was decided upon. In addition to employing the Western construction papers to reach the building industry, the association's advertising to promote the use of concrete irrigation pipe will appear in *California Farmer, California Farm Bureau News,* and *California Grange News.*

Harold W. Chutter, president, served as chairman of the meeting. He announced that the annual convention of the organization will be held some time in February, 1949, in Fresno, Calif.

It's Really True That Some People Get Cement—Direct from Yugoslavia

Is the cement shortage hampering your operations? If it is, you are not alone. Like many others, who believe cement will be in tight supply for some time to come, we were flabbergasted by the following ad, which ran in the September 23 *Chicago Tribune:* "Cement, 100,000 tons of Cement Available, Call Wabash——."

We couldn't reach the phone fast enough. To our utter amazement the ad meant what it said. An enterprising American firm had arranged with a Yugoslavian mill for the shipment of 100,000 tons of standard portland cement. The price: $27 per metric ton, f.o.b. New York City. Delivery within 30 days.

Could it be said that Marshall Tito found dollars easier to spend than rubles?

Texas, Maryland Firms Win N.R.M.C.A. Safety Awards

When all the data had been compiled in the National Ready Mixed Concrete Association's 1948 safety contest, it developed that the winner in Class A (companies producing more than 40,000 cubic yards of concrete during the contest period from July 1, 1947, to June 30, 1948) is the Lubbock Building Products Company, Lubbock, Tex. During the contest period this company had no injuries to employees or non-employees and only one property damage accident. In the Class B competition (companies producing 40,000 cubic yards of concrete or less during the contest) the winning concern was Pocahontas, Inc., Salisbury, Md., which had an accident-free record.

Presentation of the trophies will be made at the annual N.R.M.C.A. convention in New York, February 14-18, 1949. PIT AND QUARRY will furnish two handsome bronze plaques.

Nine other firms reporting accident-free records in the class B competition received honorable mention. They are the following: Mesaba Construction Co., Hibbing, Minn.; Grand Junction Building Materials Co., Inc., Grand Junction, Colo.; The Trumbower Company, Nazareth, Pa.; Builders Concrete Company, Clinton, Okla.; J. H. Beers, Bangor, Pa.; Certified Ready Mix Concrete Company, Keokuk, Ia.; Vineyard Redi-Mix Concrete Company, Vineyard Haven, Mass.; Grand Haven Ready-Mix Concrete Company, Grand Haven, Mich.; Monroe Ready Mix & Material Company, Monroe, Wis.

Gibson Concrete Co. Plant Damaged by $30,000 Fire

A fire which is thought to have originated in a truck caused damage estimated at $30,000 to facilities of the Gibson Concrete Company at Delano, Calif.

The supply room and a garage were destroyed in addition to ten pieces of equipment. According to Millard Gibson, owner, four trucks, for pick-ups and two mechanical lifts were damaged.

Concrete Waste-Disposal Pipe Exhibited by Universal

A field trip through the Universal Concrete Pipe Co. plant at Clarksburg, W. Va., to see how concrete pipe is made was a highlight of the recent joint meeting of the West Virginia Section, American Water Works Association, and the West Virginia Sewage and Industrial Waste Association.

Approximately 125 persons attended and inspected exhibits of many special products manufactured by Universal for industrial wastes. A luncheon was served in one of the plant's kilns.

Arrangements for the field trip and the pipe displays in the plant yard were under the supervision of Earl W. Chidester, Universal's plant manager at Clarksburg, and Sam Buderman, Wheeling, W. Va., Universal's West Virginia sales manager. (See illustrations below.)

DeLamater and Merriam "Go With Gocorp"—Gene Olsen Corporation

"Gocorp," the Gene Olsen Corporation of Adrian, Michigan, has just announced the association of C. S. "Del" DeLamater and T. H. "Ted" Merriam with their company.

Mr. DeLamater recently resigned his position as director, vice-president, and

C. S. DeLamater

T. H. Merriam

sales manager of Stearns Manufacturing Co., Inc. "Dell" has long been associated with the concrete products machinery industry—as sales manager for Anchor Machinery Co. (1922-1928), and subsequently with the Consolidated Concrete Machinery Co. After a brief interval away from the concrete products equipment field, he joined the Stearns Manufacturing Co., Inc., in 1935, serving in the above capacities until August of this year.

Mr. Merriam has resigned his position as manager of the eastern office of Stearns Manufacturing Co., Inc., to join "Gocorp's" staff. In 1928 "Ted" joined the staff of the Portland Cement Association, working out of its main office in Chicago, under W. D. M. Allen. Later in the Michigan office of Portland Cement Association, Mr. Merriam took an active part in the development of the concrete masonry housing program, especially in conjunction with the Detroit Concrete Products Association. His tenure with Stearns began in 1943, when he became director of field operations.

• Left: Earl W. Chidester, Universal's plant manager at Clarksburg, and members of the office staff, standing inside one of the exhibit pieces.

• Below: A part of the exhibit of concrete sewage pipe at the Clarksburg plant yard.

The Schell Industries Limited plant was planned, designed, and built for the express purpose of producing concrete masonry units.

SPOTLIGHTING

Left to right: Norman C. Schell, President; Bill Kirkpatrick, Concrete Dvision Sales; Frank Writing, Assistant General Manager; George Dunbar, Manager Concrete Division; J. F. Pearse, Treasurer.

The office building was built on the style of an attractive, substantial, modern home, to serve as an illustration of the desirability of block construction for residences.

SCHELL Industries Limited, Woodstock, Ontario, Canada, was organized in 1945 and commenced operation in the Spring of 1946 as a manufacturer of concrete block and concrete brick. Its rapid development from that date to its present role as one of Canada's outstanding concrete masonry unit producers—and one of Woodstock's leading industries—is the result of several factors.

President and founder of the company, Norman C. Schell, is factor Number One. A product of the important farming area of which Woodstock is the center, Norm Schell has successfully combined his activities as farmer and a business man. On the wall of his private

office, hangs a recently-acquired and much-cherished plaque, presented by the Holstein-Friesian Association of Canada, declaring Norman C. Schell a Master Breeder.

Although this tribute is the culmination of many years of effort, even more significant is the fact that into those same years Norm Schell has by his efforts and abilities won his spurs as a business leader. Ten years in the field of highway transportation, both freight and passenger, established the Schell name as a leader in this highly competitive business. In 1939, he extended his activities into the road construction business, which, at the outbreak of war, led him to the tremendous job of assisting in the building of airports and army camps.

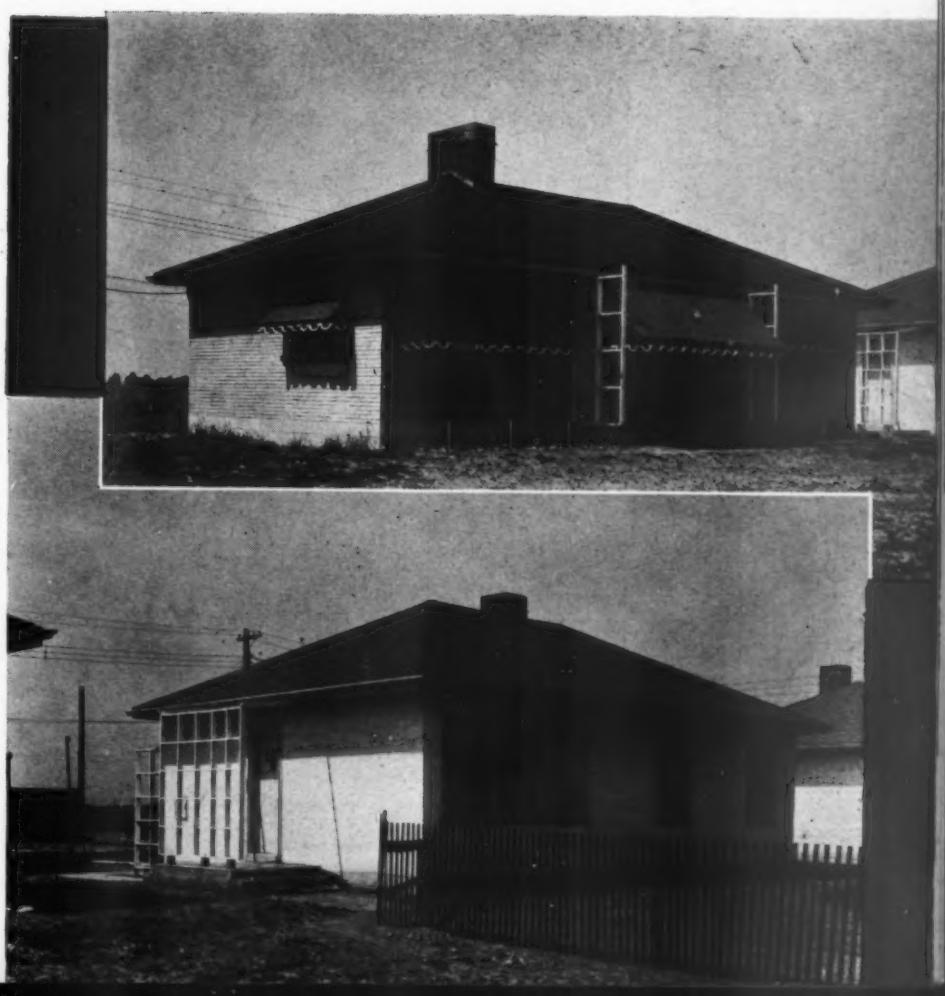
During the war, Mr. Schell visualized the huge task that lay ahead in the field of construction after the war was won. He foresaw the need for the advantages offered by concrete masonry units, and he determined to create an organization that could and would fill that need. For more than a year he studied and planned, visited outstanding plants in Chicago, New York and Detroit, and consulted with engineers. Finally, with the assistance of the Besser Manufacturing Co. engineering staff and the staff of the Butler Bin Co., the layout of equipment and facilities was determined. Architect O. Roy Moore, of London, Ontario, prepared plans to suit the requirements of the engineers, and the Schell plant was built in 1945.

The plant stands on a 106-acre site, just east of Woodstock on King's Highway No. 2, the main artery between Detroit and Windsor on the west, and Toronto and Montreal on the east. It is serviced by a spur off the main line of the Canadian National Railways. Sixty of its acres are brick and tile clay. Its gravel deposits hold reserves estimated to be sufficient for the next 15 years.

The buildings are constructed, of course, of concrete masonry units, and are so designed as to serve as examples of concrete block architecture and construction. The factory proper has served to sell many an industrialist on the desirability of this type of industrial construction. The office building was cleverly designed along the lines of home architecture. Its effectiveness may be gauged by the fact that literally scores of requests have come from

CONCRETE MASONRY

Enterprising Canadian Firm Regarded as Business Landmark In Woodstock, Ontario, Area



Many thousands of Schell concrete masonry units, both block and brick, have been used in building modern, attractive, low-cost homes to meet the post-war shortage.

passers-by for detailed plans of the building which will enable them to plan a new home in replica. The office interior, too, carries out the idea of the home and at the same time serves its function as a business office efficiently.

The entire plant and office are floodlighted at night; and the gleaming white buildings, topped with a huge neon sign have become a landmark in the district.

Because it is situated outside the corporate limits of the city of Woodstock, the company has had to supply most of its own facilities, such as water, sewage, and power. Its power plant, a 375-hp. American Locomotive 5-cylinder diesel, with a "Caterpillar" D-1300, 101-hp. auxiliary, supplies all the power for the plant. Since the war, electrical power in Ontario has been in short supply, in many instances handicapping production facilities. The Schell plant has maintained its production, and its full lighting at all times, thanks to its independence in this respect.

Quality is far more than a word in the Schell organization. Its policies with regard to quality control are rigid and exact, and every factor, from the layout of the plant to the handling and shipping of the products, has been carefully planned towards the production of the highest quality of concrete masonry unit. All products are regularly tested at the Warnock Laboratories in Toronto, and a recognized concrete engineer checks almost constantly for changes of formula made necessary by slight variations in aggregate.

All aggregates are prepared in a Cedarapids crushing plant, with a Symons cone crusher for secondary crushing of fine aggregates. The company processes 100,000 to 125,000 tons yearly and, due to weather conditions, must produce the entire year's supply between May 1 and November 1.

St. Mary's Cement Co., Ltd. supplies all cement, delivering it to the plant either by hopper car or by Schell Industries' highway hopper tank truck, which holds approximately 100 barrels per load. The St. Mary's organization has been of tremendous assistance with advice as to formulas and methods for ready-mix, block and brick.

Further valuable assistance has been received from Master Builders Co., which furnishes the Pozzolith used in all concrete mixes, and which has trained the concrete and batching control men.

The plant is designed for three Besser Vibrapac block machines. Ten kilns, with a capacity of 1584 blocks each, are controlled by visual Browne instruments in low-pressure, high-temperature curing. Both blocks and bricks are handled by Towmotor from machine to curing to storage, and thence to loading. Bricks are loaded on wooden pallets at the machine and remain on the pallets from that point right through to delivery.

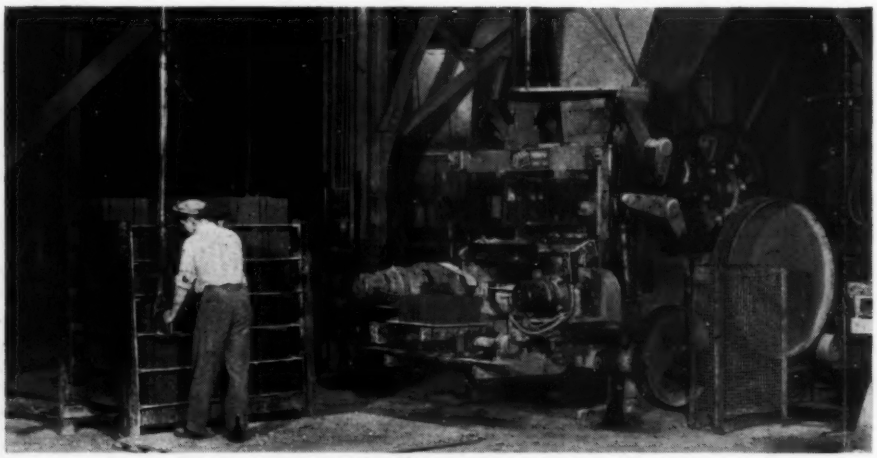
The company also produces a lightweight block made with granulated slag, which is purchased from the Steel Company of Canada, Ltd. These have high thermal efficiency, and are widely used as a back-up unit in hospital and school construction. A half million of these blocks have gone into new buildings at Westminster Hospital at London, Ontario, one of the largest veteran's hospitals in the Dominion.

Situated as it is, in the heart of a district that is at once one of the most important agricultural areas on the continent and one of the most productive industrial areas in Canada, it is logical that the Schell organization, like its founder, should have a deep appreciation of both its industrial and agricultural markets. The company is convinced that the rich farming area of western Ontario, with its beautiful farms, pure-bred herds of cattle, and its tobacco fields, will require new barns, houses, sheds, and kilns during the next few years, and that concrete masonry units will provide the type of construction needed to fill these requirements. Plans are under way at the moment to reach this market when the time is ripe.

During the last twelve months, the company has extended its facilities to include high-speed, large-volume operations in doors, trim and moulding, dowels and flooring. Producing approximately 100 doors per day and many thousands of feet of trim and dowels, the company is able to supply practically all the construction materials required for a house from one organization.

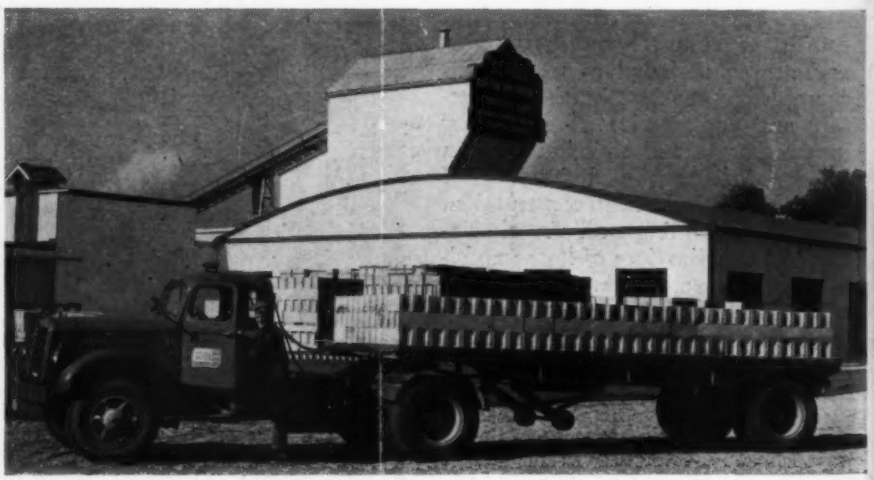
Block and brick are shipped by road and rail to users within a radius of 100 miles, a district that comprises roughly one-tenth of the entire population of Canada, and to the Province of Quebec. Wood products are shipped to all parts of the Dominion, and export markets are being developed.

(*Continued on page* 136)



Ample space is provided in the layout for every operation, to eliminate congestion or confusion.

The Company operates its own fleet of trucks and employs many additional trucks under contract.



Mountain Pumice Beds Form Basis Of Flourishing Industry

By DON R. EGBERT

another ON THE SPOT report

TAKE a revolutionary new product, add sufficient capital for proper development, with plenty of the human equation, including merchandising sense, and what have you? Something to talk about and something to write about.

In that one paragraph we give you the story of the Pumice Aggregate Sales Corp. of Albuquerque, N. M., and its mining subsidiary, the Cochiti Pumice Co. of Domingo, N. M. The details which follow compose one of those industrial dramas for which American business is famous.

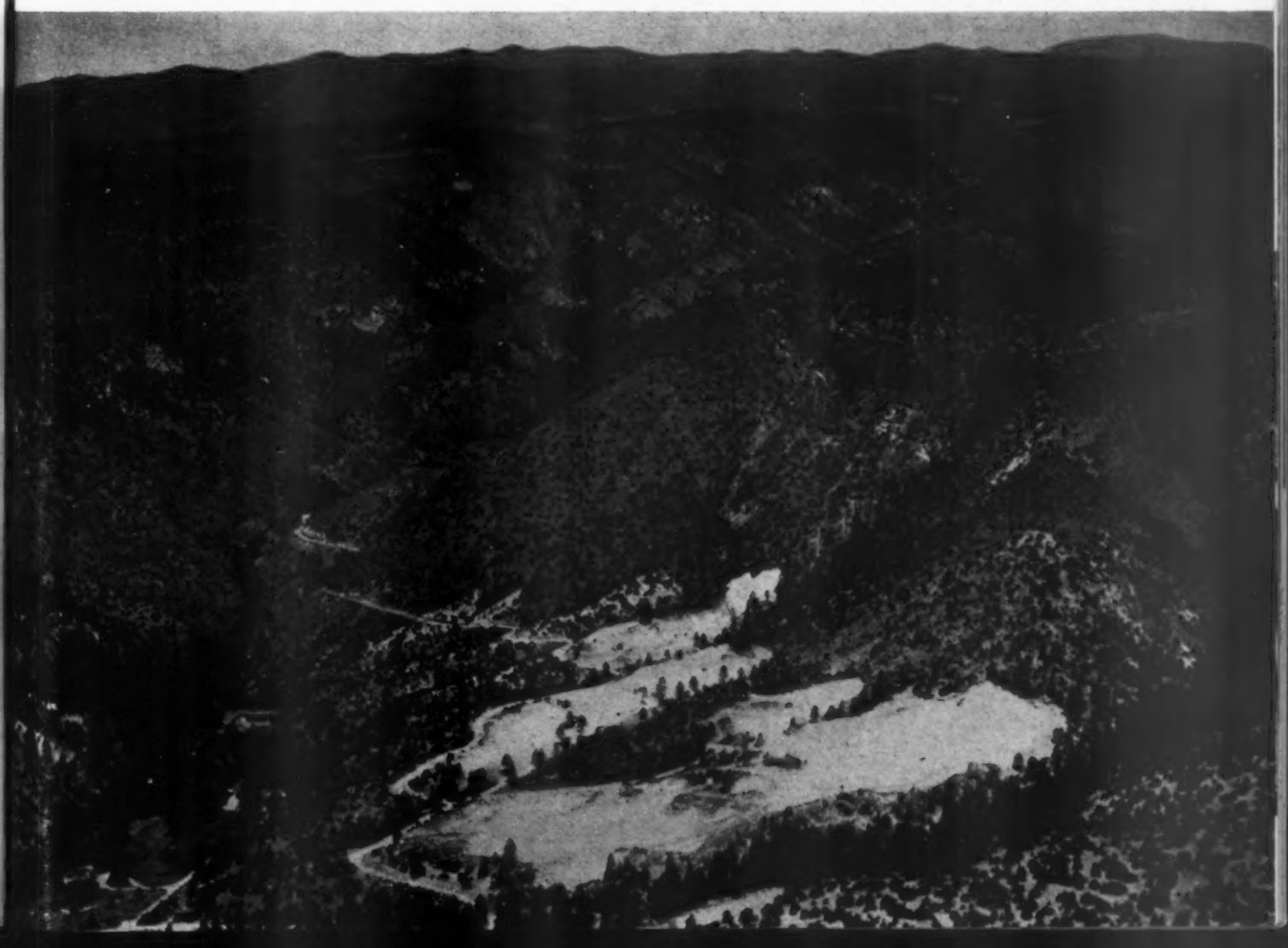
Pumice is coming to the front as a lightweight aggregate almost as sensationally as the atom bomb sprang out of the same great wastes of New Mexico. As a nonmetallic mineral, it is simply volcanic glass, developed by nature much as air-entrained concrete is developed by man-made equipment. It is found only in the Far West and Southwest, and New Mexico is reputed to have the largest and finest deposits in the country.

Replacing sand and gravel as an aggregate in block, it has the advantage of half the weight and six times the insulation, with strengths that can meet all building codes; it can be nailed and sawed into fractional units; it is porous, without capillary attraction, and free from sweating and checking under sharp climatic changes. Lightness in weight and favorable freight rates permit it to be laid down economically in Eastern and Northern states from the New Mexico deposits. Lower rail tariffs now in prospect may broaden this trading area as far as New York.

Small wonder, then, that the pumice producers are hopeful for the recognition and acceptance of pumice aggregate in the North and East, with the result that concrete homes and business structures will become as universal in the most thickly populated areas as they now are in the South and Southwest. What this means to the cement and concrete industries is too obvious to require a blueprint.

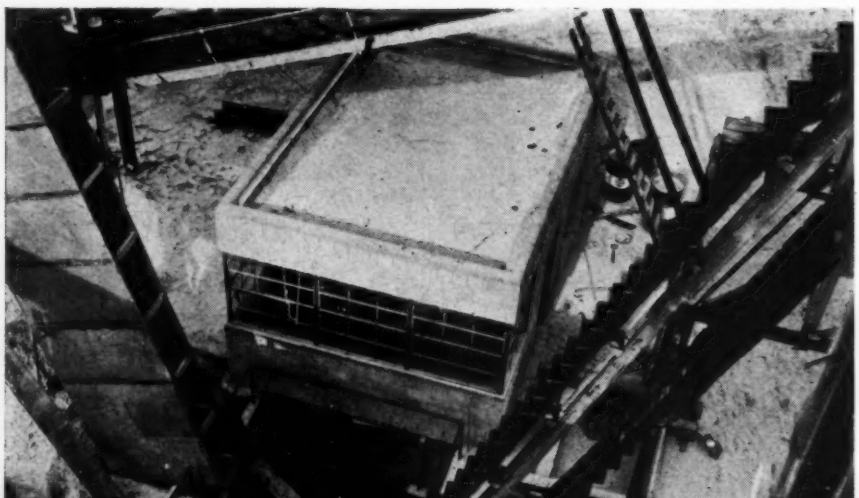
The story of the Pumice Aggregate Sales Corp. and the Cochiti Pumice Co. goes back two years, when T. Jack Foster, president and principal stockholder, was living in Norman, Okla. Mr. Foster had already "done quite well" in a number of enterprises, including oil, automobile supplies and the motor-court business. He was invited to be the "angel" of a new block plant and one of the arguments was the prospect of making a lightweight block with pumice aggregate from New Mexico, something then hardly heard of.

Mr. Foster's thinking swung from the block to the pumice, and he took a trip to New Mexico to investigate. After seeing the Mountain Valley deposit in the Jemez Mountains near Albuquerque, he bought into the enterprise, then



• An aerial view of the pumice deposits in the Jemez Mountains of New Mexico, source of the Pumice Aggregate Sales Corporation's supply.

• A trackside view of the plant, showing the screening station and the main storage bin.



• Looking down into the grading plant, where the run-of-the-mine is broken down and graded for blending.

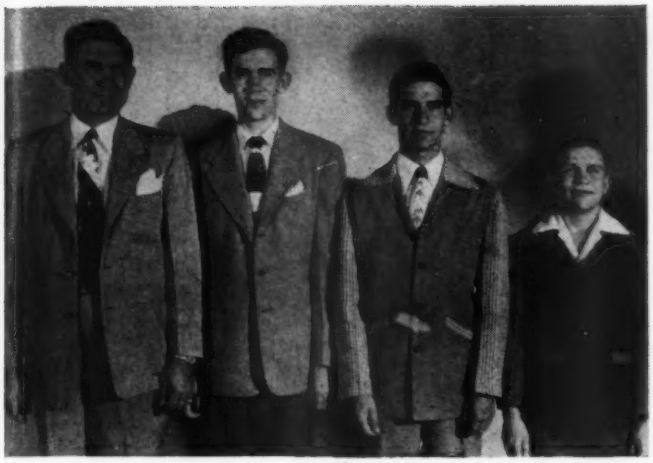
• Below: Adjacent to the Domingo railhead are the storage hoppers and the plant (left).

acquired a majority holding, built a modern new grading plant at the Domingo railhead, 15 mi. from the deposit, and took to the road to sell the idea on a large scale. Prior to this time the material from this company was being sold to a few customers only, as a lightweight aggregate.

Mr. Foster's competitors on the West Coast were doing a selling job also, and the fact that pumice aggregate is now being used all the way from Los Angeles to Chicago attests their combined degree of success. Several large skyscrapers are now being erected of pumice concrete in Los Angeles today, as told in the July issue of PIT AND QUARRY, in the report on the newly organized Pumice Producers' Association. The aim of the organization is to promote the material and safeguard the future of the industry.

"Pyramid" pumice, as the product of Pumice Aggregate Sales Corp., is known, has been specified in schools in Oklahoma City and Elkhart and Hugoton, Kan.; in extensive construction at the universities of New Mexico, Oklahoma and Tulsa, and at the Oklahoma A. and M. college; in a hospital at Altus, Okla.; in over 300 houses at a government project in Albuquerque; in a hotel at Duncan, Okla.; in clinics at Oklahoma City and Norman, Okla.; in a $3,000,000 apartment project in Norman, and for many other large construction jobs.

While introducing pumice aggregate, Mr. Foster was also developing and perfecting his organization at Albuquerque and Domingo. Blessed with three sons, he put them to work, so that they could learn the business from the ground up. T. Jack, Jr. stayed home from college for a year to assist his father in the sales office, while the next



• The Foster family team—T. Jack Foster, T. Jack Foster Jr., 20; Bob Foster, 17; and Dick Foster, 14.

youngest, still in high school, put in his vacation at the plant. The youngest lad, just about to finish Junior High, took over the direct-mailing department and proved useful in many other ways. Father and sons are shown in an illustration accompanying this article.

At the plant Jack Edwin Counts, a young engineer with tremendous enthusiasm for his job, is the technical director in charge of sales, and from Mr. Counts our production and grading story was obtained. John C. Cameron is the plant superintendent.

A bulldozer is used to strip the overburden at the mine and to remove the trees and brush. The material is found in deposits that will run from 25 to 150 ft. deep and over various areas. The gradation will vary considerably from pit to pit and will also vary in relation to the top or the bottom of the pit.

The bulldozer pushes the pumice into a hopper, and from there the material is loaded into trucks by use of a conveyor belt and is hauled to the railhead at Domingo, where the grading plant is located.

At the plant the material is stockpiled. A bulldozer is used to push it into the trap, whence it starts its journey through the plant and the grading process.

Tests have proved that while the coarse material, ⅜-in. down to ¼-in., is largely responsible for the light weight and the insulative and acoustical values, the fines, ¼-in. down to pan, and particularly the ⅛-in. down to pan, control the strengths. ("Down to pan" means the smallest particles that occur.)

When there are insufficient fines, it is necessary for the block plant or contractor to raise the strengths by using ordinary sands. This naturally cuts down on many of the values afforded by pumice construction.

Cochiti Pumice Co. makes the addition of sand unnecessary by breaking down the fines in two gradations, ¼-in. down to pan, and ¼-in. down to ⅛-in. This is then reblended and sold as "fines." When there is a shortage of the ⅛-in. and less, a secondary crusher is brought into use to manufacture these fines.

Many customers prefer to buy just the fines and the coarse. Those who do not have the facilities for blending these separate gradations or do not care to go to the expense, order the pumice already blended. This is taken care of at no extra charge by blending through electronically controlled Syntron feeders. This separation and reunion are necessary to produce a gradation that falls within A.S.T.M. specifications for lightweight aggregates. Several screen analyses are made each day and the Syntron feeders are adjusted accordingly.

The engineering on the installation of the feeders was done by Reuel W. Bartley, an engineer, who makes his headquarters in Tucson, Ariz., and serves clients in a number of Western states.

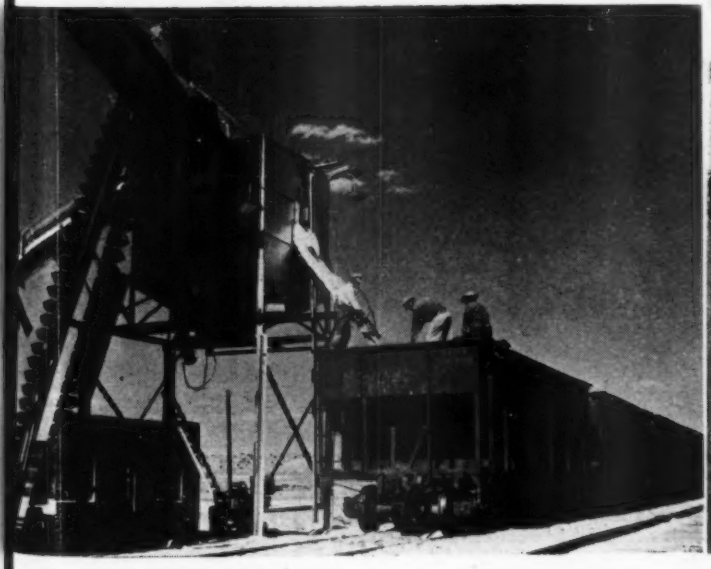
After the mine-run pumice is pushed into the trap at the plant, a large conveyor belt carries it into the first Universal screen and scalper. Any rocks or roots are taken out at this point, as well as a large portion of the fines.

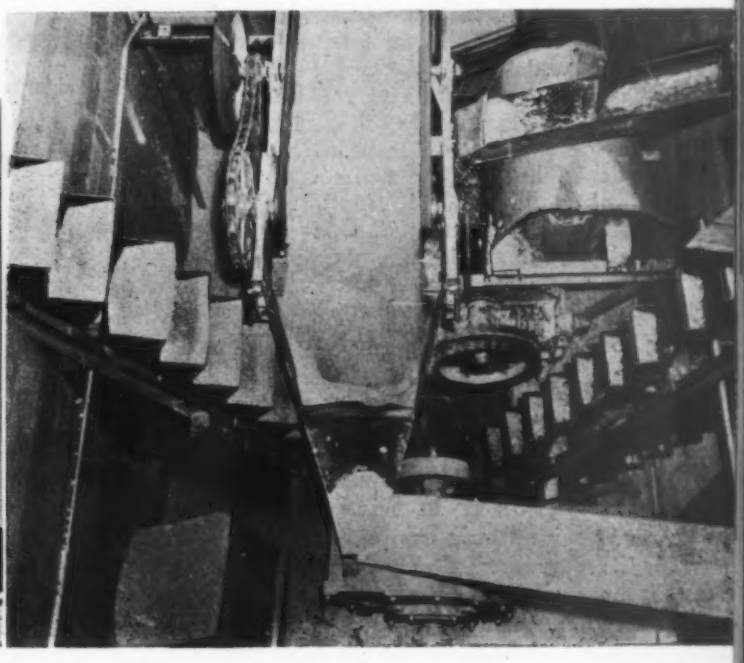
The material next goes into a crusher pit, where a roll crusher and a hammer mill are in operation. Various portions may be fed into either mill so as to get close to the proper gradation for screening. A conveyor belt then carries the material onto the Universal screens, where it is taken out at four sizes: Minus ⅛-in. to dust; plus ⅛- to minus ¼-in.; plus ¼- to minus ½-in. and plus ½-in.

Inasmuch as the oversize is not sufficient in quantity to be marketable, it is taken back to the crusher to produce additional particles that are usable. All three sizes are

(*Continued on page* 140)

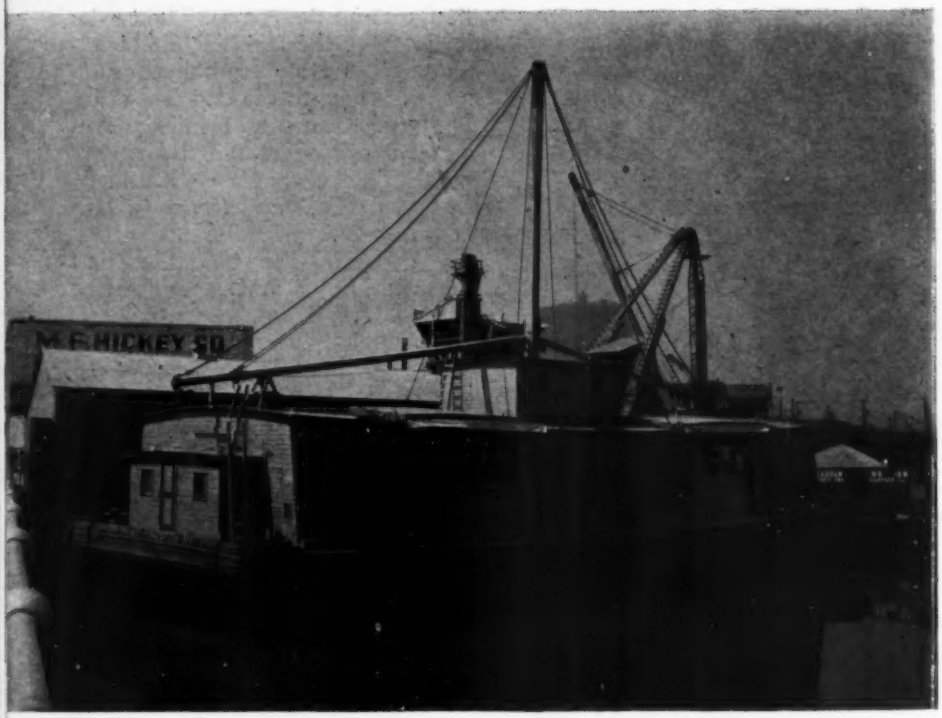
• Below: Loading freight cars with the finished product for shipment to many points east of the Rockies.
• Right: An unusual view (looking down) to the blending operation, accomplished by electronically-controlled feeders.





One-Man

Lighterage Firm To Unload



• One of the Dwyer Lighterage barges unloading bulk cement at the ready-mixed concrete plant of the M. F. Hickey Co., Brooklyn. This 3,000-bbl. barge can be unloaded in 13 to 15 hours.

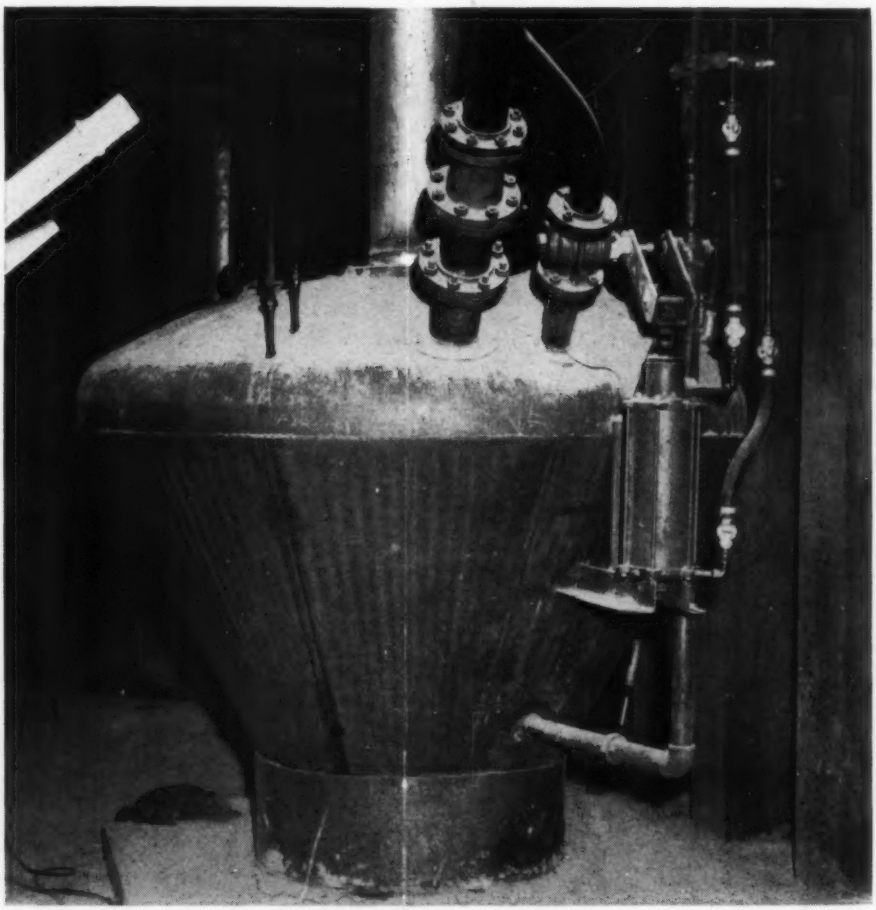
another ON THE SPOT report

DWYER LIGHTERAGE, INC., of New York City provides a unique barge delivery service for ready-mixed concrete plants, contractors, building supply dealers and other users of portland cement whose bins are located on the New York water front. Loading barges for an operation such as this is a relatively simple matter, since the mill and railroad terminal dock are invariably equipped for gravity loading. Unloading at the customer's plant, however, presents a somewhat more difficult problem, and the Dwyer company experimented with several methods before arriving at one which seemed to be adaptable to most conditions.

Unloading with grab buckets was found to be reasonably satisfactory when the bins were close enough to the docks, but the customers complained a good deal about the apparent loss of material. Conventional bulk material pumping systems, although they solved this difficulty, required both compressed air and a source of electric power at the unloading dock. It was primarily to get away from the necessity of using electricity that the company, in 1938, installed a Robinson air-activated conveyor system on one of its barges. In this system, which requires only compressed air for its operation, the activator or conveyor tank (see cut) is filled and the entrance port closed. Compressed air, admitted in fine jets around the discharge port located at the base of the tank, causes the finely pulverized material to fluff up, forming a fluent mixture of air and solids. As the pressure builds up inside the tank, the lightened mass flows through the discharge line, precisely as any fluid flows under pressure.

The system can be operated manually, automatically or by remote control, and the pipe system can be arranged to discharge into any number of receiving bins. In the Dwyer installation it was found possible to install the activator in the bottom of the barge without making any structural changes. The unit was located on one side about amidships in order to have the receiving hopper in a central position with respect to the cargo and yet avoid interference with unloading operations. The timber sides of the cement hopper rise about 2½ ft. above the cargo deck to assure adequate reserve storage capacity with which to feed the activator.

The hopper is charged with a



• The activator tank is a cone-shaped drum of 32-bbl. capacity. The side walls slope at 60 degrees. Compressed air is admitted in fine jets at the base.

Unloading System

Uses Air-Activated Conveyor Cement Barge

mobile gasoline-powered Butler Carscoop, which has both the speed and the high degree of maneuverability requisite for an operation of this sort. This unit is kept on the

By WILLIAM M. AVERY

barge at all times as a permanent part of its equipment. It handles about 6 cu. ft. of cement at a time.

In order to keep up with the air-activated conveyor it is necessary to operate the Carscoop continuously, a practice which is made possible without additional help by the automatic operation of the hopper gate over the activator. When the activator unit is completely empty, the gate is opened automatically by an air ram, admits about 32 bbls. of cement from the hopper, and then closes. The compressed air supply for the patented aerating system inside the tank is, of course, cut off during the few seconds required to fill the cone-shaped drum. As the tank empties the pressure drops gradually. When it reaches about 2 lbs. the air inlet valve is closed by a ram on the side of the tank. The same ram simultaneously opens a by-pass vent from the top of the tank into the conveyor line, and the remaining compressed air in the tank escapes through this vent into the discharge line, blowing the conveyor pipe clear of cement.

The time of unloading depends largely on the length of the pipeline through which the cement must be moved. An average setup may involve a 200-ft. run of 4-in. pipe and a 60-ft. riser into the bin, although the system is said to operate successfully, without boosters, through pipes 3,600 ft. long with 600-ft. rise. On an average the Dwyer barge unloads a 32-bbl. container every 8 minutes, or 200 to 225 bbls. per hour. This is a higher rate than the company was able to achieve by any of the alternate methods tried. Thus, a 3,000-bbl. barge can be unloaded in 13 to 15 hrs. if the entire cargo is consigned to a single plant.

Normally the customer supplies compressed air from the dock, but for outlying jobs on which air is not available the barge line sets up a portable compressor on the bow of the craft. The system operates at 22 lbs. pressure, and a 200-c.f.m. compressor is adequate for practically all setups. Usually a permanent piping system is installed at the receiving plant, and the connection from this line to the discharge pipe of the conveyor tank is made with rubber hose. Under normal conditions the entire hookup can be completed within 15 minutes after the barge is tied up to the dock.

• The valve cabinet beside the hopper has manual controls for operating air rams and opening and closing compressed-air lines into the conveyor tank.

Perhaps one of the most attractive features of the system, apart from its relatively low installation cost, is that its operation requires only one man—the barge tender—to handle the Carscoop. Similar air-activated conveyor installations are now used for handling cement in mills and on dams and other large construction projects, as well as in block plants and batch-mix plants, and for conveying a wide range of other materials varying in weight from 5 to 250 lbs. per cu. ft. and in fineness from 20 to 500 mesh. Robinson Air-Activated Conveyor Systems is a division of Morse Boulger Destructor Co., New York.

• This gasoline-powered hydraulic-lift shovel feeds cement from the cargo dock into the conveyor supply hopper.

Group Insurance Plan Adopted By Anchor Concrete Products

Anchor Concrete Products, Inc., of Buffalo, N. Y., has adopted a group insurance program for the benefit of its employees. Frederick W. Reinhold, president, indicated that the plan was originated by the company management and unanimously accepted at a meeting of the employees. It is underwritten by the Metropolitan Life Insurance Company and is a joint undertaking between employer and employees, in which the employees contribute 25 percent. This amount is deducted from their pay and the company bears the balance of the cost.

The protection offered to the employees in the program consists of life insurance and sickness and accident insurance, as well as hospital and surgical benefits for employees and their dependents. Visiting nurse care and the distribution of pamphlets on health conservation and accident prevention are also included in the plan.

Ready-Mixed Concrete

Two companies are now delivering ready mixed concrete in Chicago. This story is about the Imperial Ready Mixed Concrete Company—one of the Chicago pioneers. An important part of this article concerns Imperial's novel employee ownership of delivery trucks.

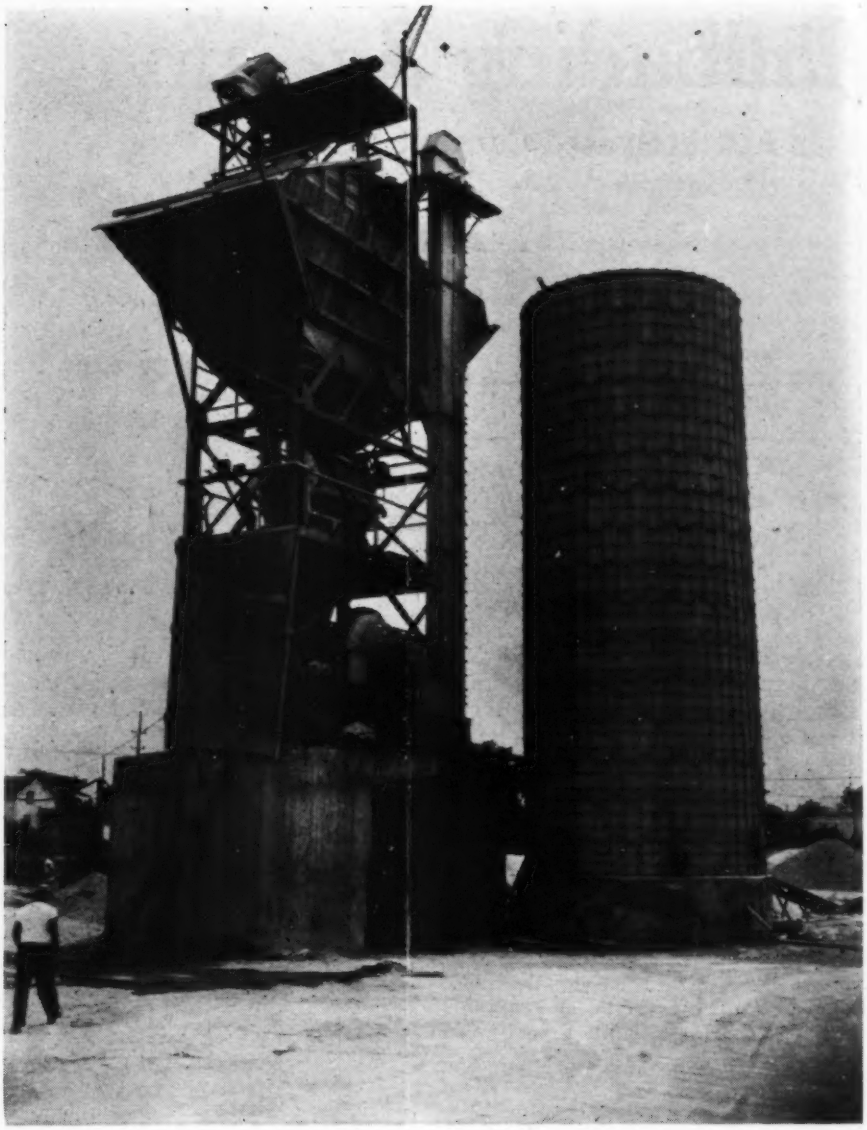
By EDWARD BRUNENKANT

FOR the past twenty-odd years ready-mixed concrete has been available in every major city in the United States except Chicago. Since its first appearance, shortly after World War I, the ready-mixed concrete industry has grown rapidly throughout the rest of the nation. From an estimated 5 million cubic yards in 1930, production advanced steadily (except for a slump during the depression years), reaching 20 million cubic yards in 1947. Today the industry, by virtue of marketing a product which is inherently economical, available, and convenient to use, is this country's largest single consumer of cement, using approximately one barrel of cement out of every seven produced.

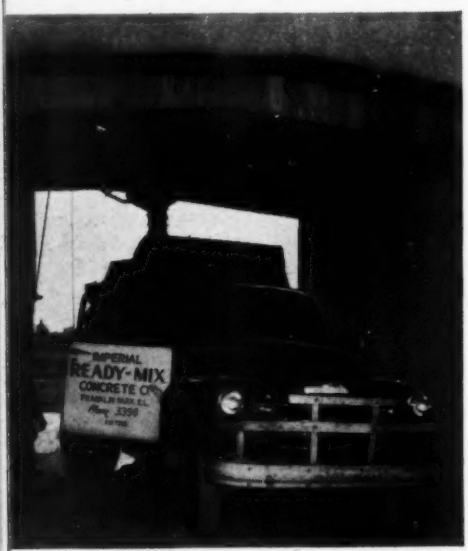
In the face of almost universal acceptance of ready-mixed concrete, it is rather remarkable that this valuable product has been frozen out of Chicago for so many years. Very recently, however, two companies, The Allied Concrete Supply Co., and the Imperial Ready Mixed Concrete Co., pioneered the delivery of ready-mix in the city. It is highly doubtful whether either of these companies would have entered the ready-mixed field if air-entraining cement hadn't made possible the delivery of pre-mixed concrete in special non-agitating "bath tub" truck bodies. Air entrainment, or the introduction of minute air bubbles in the concrete mix, has enabled Imperial to haul pre-mixed concrete distances up to 22 miles in non-agitating trucks without appreciable segregation or bleeding—a feat virtually impossible with a mix designed with standard portland cement.

Delivering concrete in Dumpcrete bodies has an additional benefit in Chicago not directly connected with the normal operation of the business. A ruling made by Local 150 of the AFL Hoisting, Portable, and Shovel Engineers insisted that one of its operating engineers ride on transit-mix trucks despite the fact that en-route mixing was automatic. Because of this union demand, potential operators found that the added cost entailed by the "extra" rider would practically eliminate all profits. Naturally the non-agitating truck body now used in conjunction with air entrained concrete has wiped out the grounds on which the union could reasonably demand employment of an operating engineer.

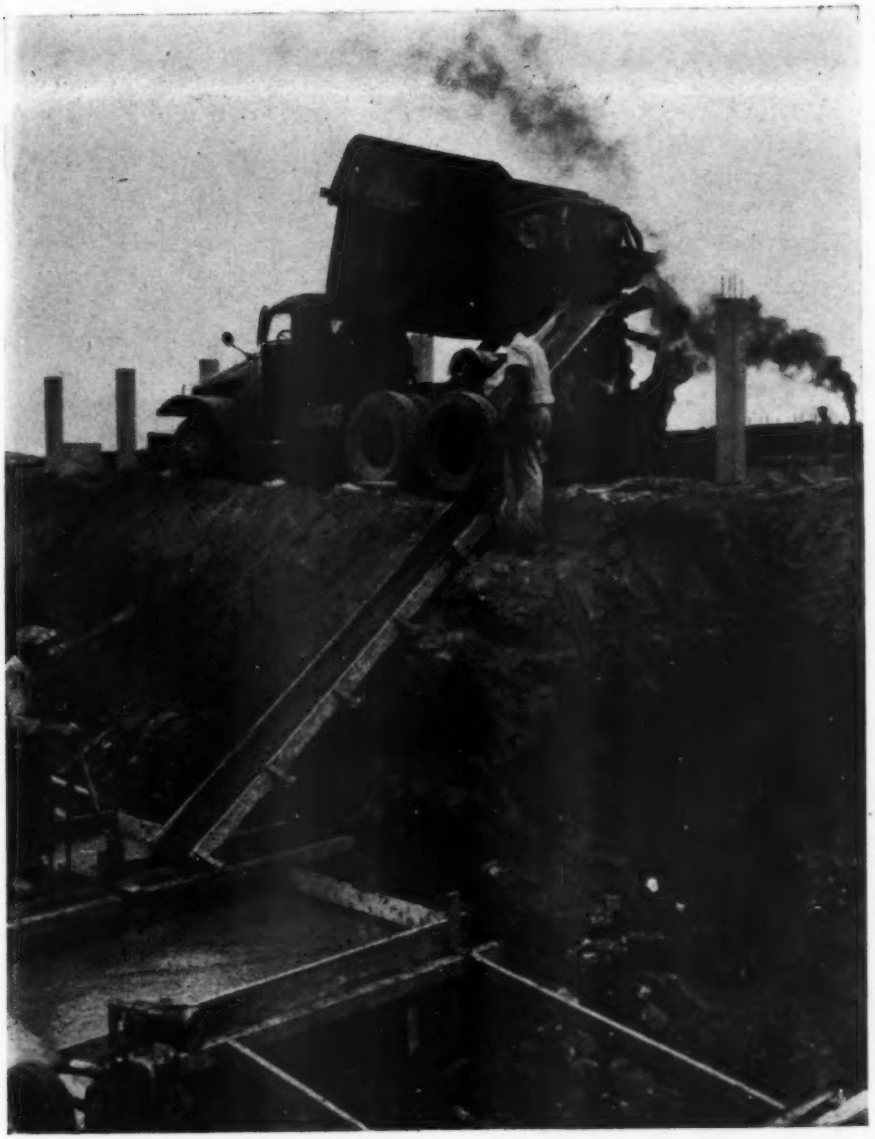
In all likelihood, the rather arbitrary stand taken by the union has been in a large measure responsible for excluding ready-mixed concrete from Chicago. Other reasons, however, have been advanced to explain



A view of the Imperial Ready Mixed Concrete Company's plant at Melrose Park, Ill.—Chicago's first permanent commercial plant. Present facilities permit the production of 300 cu. yds. of concrete a day.



The area around the plant is completely paved. Trucks can pull in from one side and out the other.



Here is one of Imperial's non-agitating delivery trucks pouring concrete at the job. Delivery in this type of body has circumvented an old union ruling which was primarily responsible for excluding ready-mix from Chicago.

Comes to Chicago Area

its absence, although in the writer's opinion, only two other explanations have much validity: (1) Contractors in Chicago are accustomed to handling dry-batched mix. With sizable investments in pavers and stationary mixers, there is little incentive on their part to turn to ready-mixed concrete. Although no statistics are available, there is some evidence supporting the claim that under local conditions dry-batched concrete is more economical than ready-mixed. (2) Proprietors of material yards, who are in the best position to enter the ready-mixed concrete business, can, at the present, sell all the aggregates and cement that they can buy or produce. From their point of view the purchase of high-priced transit-mix trucks, which are only single-purpose units, is an unwarranted expenditure.

There seems little doubt that all of the considerations stated above have influenced in some measure the decision to keep ready-mixed concrete out of Chicago. It is a fact, however, that both of the new Chicago ready-mixed concrete companies have found eager customers for their concrete — particularly among private home owners.

The Imperial Ready Mixed Concrete Co. is a wholly-owned subsidiary of Imperial Flooring & Waterproofing Co., a 60-year-old Chicago firm. With practically all of the Chicago area to choose from, they decided to build their new ready-mixed plant in Melrose Park, a western suburb which affords both an excellent industrial and residential market. In almost jig time — four months—Imperial bought and set up its plant equipment and began delivering concrete.

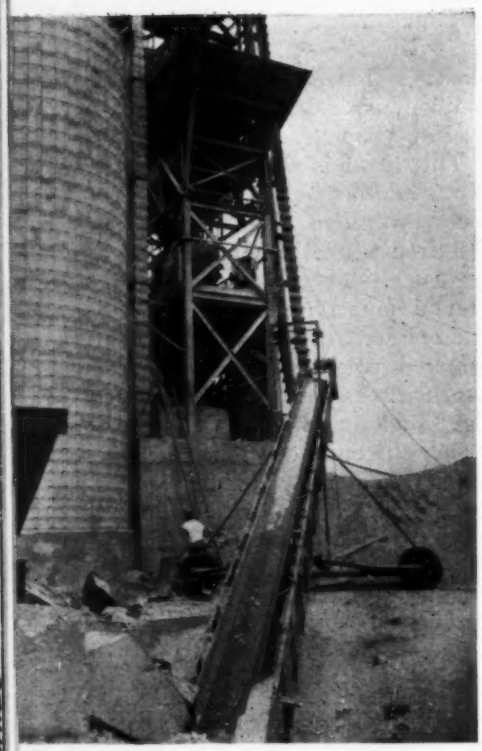
This plant is similar in most respects to other well-designed central-mix operations. Aggregates are delivered to the plant either by rail or truck. There are two underground hoppers: one for freight cars and one for trucks. Both hoppers are centered over a short belt conveyor which discharges the aggregates at right angles onto the 30-in. by 60-ft. main belt conveyor. This main conveyor frame is fixed at the feed end and mounted on pneumatc-tired wheels at the discharge end. With this arrangement, the unit can be pivoted and either used to charge the bucket elevator feeding the plant or swung in a semi-circle and used as a stockpiling conveyor.

Ample overhead storage facilities are provided with a 3-compartment Butler bin. In addition, a new 1600-bbl. silo, built of concrete staves, has recently been completed for the storage of bulk cement.

Aggregates and cement are proportioned in a 3-cu. yd. 3-compartment Heltzel weigh batcher. Mixing is now done in a 3-cu. yd. Smith mixer, but provisions have been made for the addition of a second 3-cu. yd. mixer of the same make. This will boost the present 300-cu. yd. daily capacity of the plant to 500 cu. yds., which coincides with the overall conveyor capacity.

By any yardstick, delivery of premixed concrete is the most important single operation of any ready-mixed plant and the hardest to

Jay Stream (left) and Ralph Oury (right) assistant plant manager and plant manager, respectively.



The front-end loader is used for general clean-up work around the plant. Aggregates from the hopper fall on the small belt conveyor coming out from the tunnel.

Left: Another view of Imperial's plant. Note how the main belt and conveyor frame is mounted on wheels. With this arrangement the conveyor can also be used to stockpile aggregates.

control. Once the truck has pulled away from the yard, the concrete load, the truck, and the good will of the company are in the hands of the driver.

Many systems of control over the driver have been tried, all with varying degrees of success, but Imperial has hit upon a plan which seems to be a definitive solution for them. All concrete produced at Imperial's Melrose Park plant is delivered in driver-owned trucks fitted with company-owned bodies.

When the operations were first started the company bought 5 new Chevrolet chassis on which were mounted 3-cu. yd. Dumpcrete beds. Each employee was offered the opportunity to purchase a truck for $1,000 down; the balance to be paid off at the rate of $.35 for each yard of concrete the driver hauled. With the generous allowance of $1.50 for the first yard and $.50 for each additional yard (extra pay for longer hauls) the driver has had plenty of leeway to pay for his truck and still take home a comfortable amount. As a matter of fact, Imperial driver-owners have been averaging better than $250 per week. By retaining ownership of the Dumpcrete bodies, the company has insured itself against the possibility that the drivers might go into business for themselves or someone else.

The plan has already paid big dividends to both the drivers and to the company. It has had the overall effect of making the company responsible only for the production of quality concrete and the drivers responsible for the delivery—which is the end effect that the company wanted.

J. Foster Oury is president of the Imperial Ready Mixed Concrete Co. and his younger brother, Ralph, is plant manager. Both brothers believe that Chicago has room for at least 20 more ready-mixed concrete plants. They feel that ready-mixed concrete is in Chicago to stay and that any additional plants which are set up in the area will not be competitive but will help promote their worthwhile product to a public that has been unaware of its advantages for so long a time.

Spotlighting Concrete Masonry

(*From page* 128)

In its subsidiary plant at Brantford, the company produces toys and games for the Canadian market and for export.

One of the many indications of the high caliber of Norman Schell's leadership lies in the long association with him to which many of the company's key men and workers alike lay claim. J. F. Pearse, now treasurer, joined him in the transport business 12 years ago. George Dunbar, manager of the concrete division, has been with the president since 1944. Max Taylor, now manager of the service department, has 12 years of service; Bill Kirkpatrick, of the concrete sales department, ten years. Del Miller, superintendent of the gravel storage yards, started work on the Schell farm 14 years ago and has been with "the Boss" since. F. Clark's 12 years of service were interrupted only by World War II, when he served in the Tank Corps in France and Germany. And so the list goes.

First to give all credit for his personal success to the men who have worked for him and with him, Mr. Schell speaks in glowing terms of these long-service men and of the following: J. L. Coles, vice-president, a Woodstock insurance broker; A. C. Whaley, secretary, a barrister-at-law; Frank Whiting, assistant general manager, who came to the company in the Spring of 1948; A. Lamb, production manager of the wood products division, who dates his service from January, 1948; R. Bowman, powerhouse superintendent, who came to Schell Industries from duty as chief petty officer in the Royal Canadian Navy during the war.

Cuban Cabinet Expropriates U.S. Owned Cement Plant

President Ramon Grau San Martin of Cuba recently appointed Col. Helio Sanchez Lima, chief of the Camaguey military district, to assume the management of the Cuban Portland Cement Company's plant at Mariel near Havana.

The United States owned plant had been closed when the municipality of Mariel attempted to collect taxes claimed by the management to be exorbitant. This action led to the cabinet's order of seizure. The Cuban government expects to operate the plant, the only one of its kind in the republic, since cement is in extremely short supply.

Three Plants to Produce 230,000 Yards Of Concrete for Feather River Project

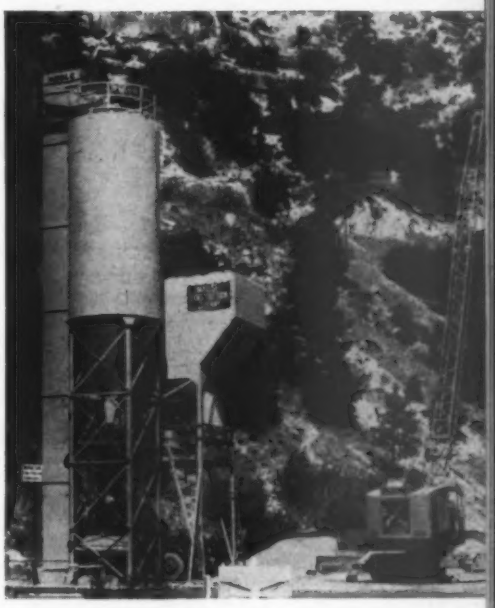
TWO concrete dams and hydroelectric power plants are under construction in scenic Feather River Canyon in California by the Pacific Gas & Electric Co. The project, costing $62,000,000, is expected to be completed late in 1949 or early in 1950.

Nearly 250,000 cu. yds. of concrete is involved; and this is being produced for the most part by three Noble batching and mixing plants. One of these, a Noble CA154 semi-automatic batching unit with 2,500 cu.-ft. cement silo, first went into service for the Walsh Construction Co., which is subcontracting the tunnels.

The Morrison-Knudsen Co., general contractor has erected two Noble 500-ton completely-automatic batch plants with mixers, one serving Cresta Dam and the other upstream at the site of Rock Creek Dam.

The Cresta plant incorporates a 2,500-cu. ft. cement batching silo with a 3,250-cu. ft. cement storage silo alongside. The Rock Creek plant is identical except that it utilizes two 3,250-cu. ft. cement silos for reserve cement storage. Koehring 2-cu. yd. mixers are installed beneath the weigh batchers at each plant.

Cresta Dam will be 113 ft. high, 350 ft. long and will require 80,000 cu. yd. of concrete. Rock Creek Dam, 115 ft. in height and 500 ft. across, will utilize 150,000 cu. yd. of concrete in its construction.



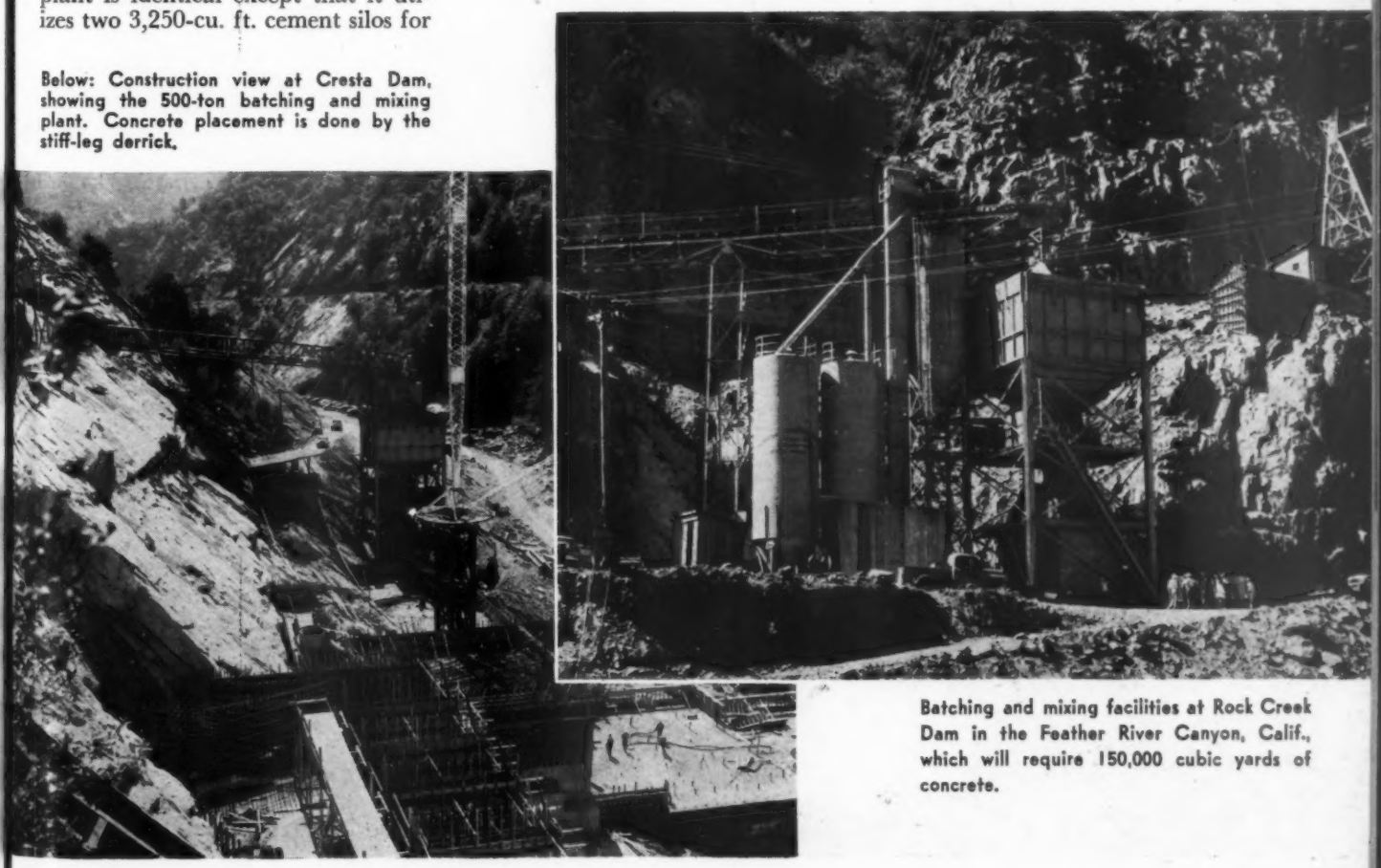
Concrete for the tunnels of the Feather River project is batched at this plant. The truck-mounted crane at the right loads the aggregate bins.

New Plant to Mix Concrete For $18,000,000 Canal Locks

The River Construction Corporation of St. Louis, Mo., has completed the construction of a concrete mixing plant which is said to be one of the most modern in the country. The new facilities will be used to produce 400,000 cubic yards of concrete for the construction of locks for the Chain of Rocks Canal in the Mississippi River. Cost of building the locks is estimated at approximately $18,000,000, and the total for the canal project is expected to reach $30,000,000.

The mix plant is virtually automatic, with all mixing and weighing accomplished by push-button control.

Below: Construction view at Cresta Dam, showing the 500-ton batching and mixing plant. Concrete placement is done by the stiff-leg derrick.

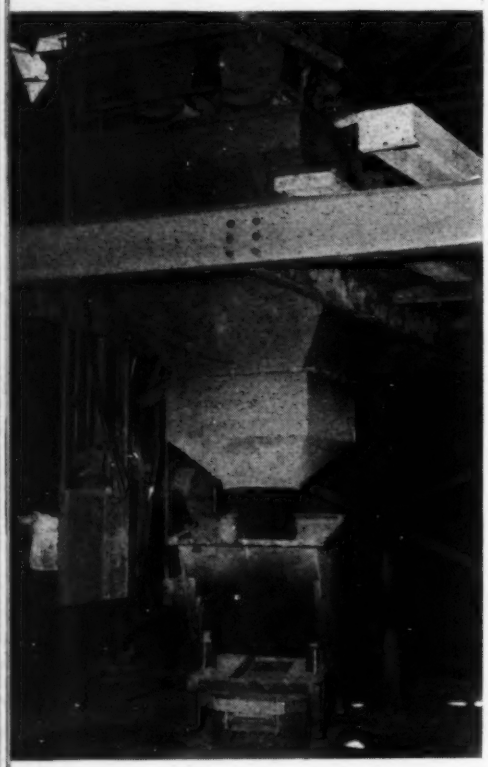


Batching and mixing facilities at Rock Creek Dam in the Feather River Canyon, Calif., which will require 150,000 cubic yards of concrete.

Capacity of Concrete Pipe Plant Increased by Modernizing Batching

another ON THE SPOT report

When we visited the Standard Concrete Pipe Company's plant at Springfield, Ill., several weeks ago, work was nearing completion on an entirely new layout for storing, handling and batching materials, and the improved facilities were already in service on a limited basis. In the past this otherwise modern and efficient plant, which is the sole producer of concrete pipe in the state capital, had batched materials entirely by volume, using bagged cement in both pipe and block production.



Although the new batching plant, incorporating facilities for bulk cement handling, has not been in operation long enough to indicate its precise effect on output, a sizable increase has been noted as a result of eliminating delays in recharging the three mixers in the plant. The company also anticipates being able to maintain its high quality standards with considerably less strain on the plant crew.

The batch plant was designed and built by C. S. Johnson Co. It consists of a 4-compartment 300-ton aggregate bin with a center cone for live cement storage, a separate 11- by 30-ft. 640-bbl. cement storage silo, and a standard 3-beam Johnson weigh batcher. The center cone in the aggregate bin is divided into two 30-bbl. compartments, making it possible to handle two types of cement and to batch all materials at one central point. The same bucket elevator discharges incoming cement into the silo or transfers it from the silo to the batching bins.

The old storage facilities, comprising a single-compartment 200-ton bin and a two-compartment 100-ton bin, have been retained for use as reserve storage, giving the plant a total aggregate storage capacity of 600 tons. The single aggregate elevator is so arranged between the two groups of bins that it can be used for feeding either group directly from cars and trucks, or for transferring materials from the old bins to the new. The company uses sand and gravel in block production, and natural sand and crushed limestone in pipe.

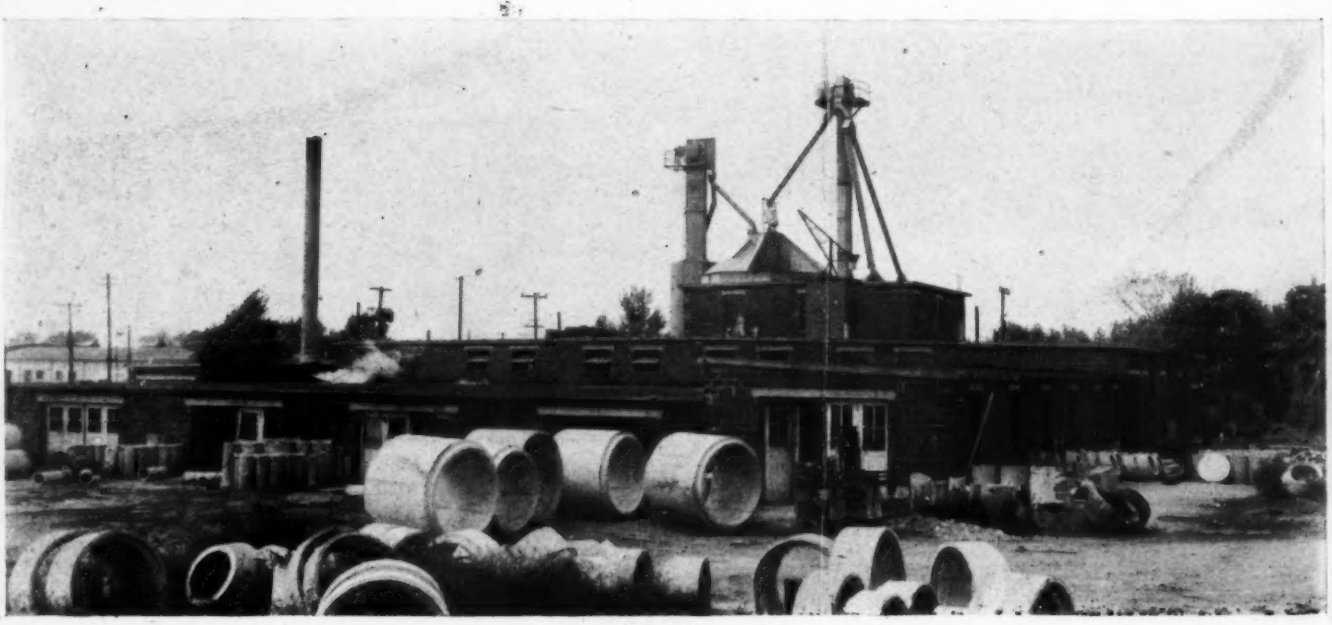
By WILLIAM M. AVERY

The materials are discharged from the batcher into an automatic end-dump box which is moved from point to point within the plant by means of a Transporter Dual Lift truck powered with Exide Ironclad batteries. The bin is mounted on a structural steel stand which the platform of the lift engages. In discharging to mixers, all of which are located below floor level, the box tilts forward on geared rockers (see cut). In order to prevent delays at the mixers, two of these portable boxes are in service at all times.

Accurate predetermined water additions are made at the mixers by means of Construction Machinery Co. Accurmeters. The company

• Left: Discharging materials from the weigh batcher into one of the portable bins used for transporting to the mixers.

• Below: A general view of Standard Concrete Pipe Company's plant at Springfield, Ill. Elevators and upper bin structure of the new batching plant may be seen in the background.

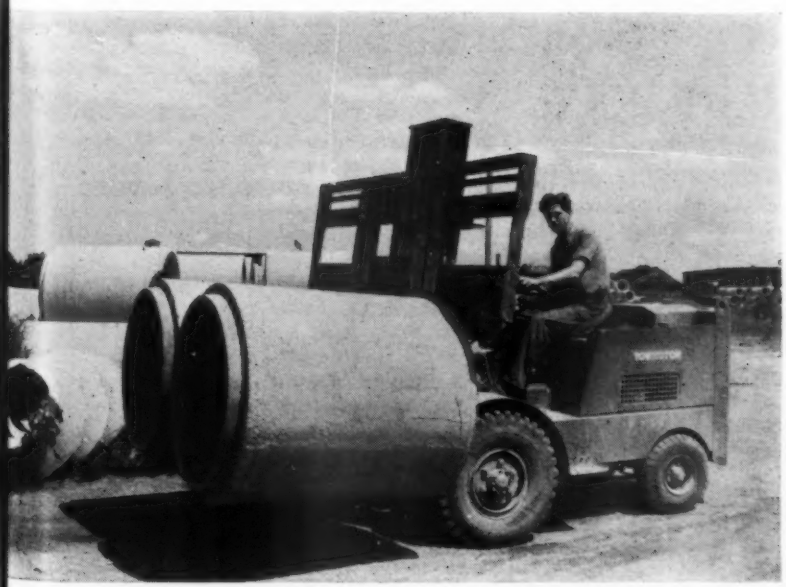


uses fly ash as a replacement for approximately 20 percent of the portland cement which would normally be required in all mixes. Inaugurated about a year ago, this practice has been found to yield more workable and plastic mixes, and to produce concrete of somewhat higher compressive strength than comparable standard mixes. Fly ash additions are handled in a separate operation at each mixer, the amounts being measured by volume from the 100-lb. bags in which the material is received. The use of fly ash has been found to be equally effective in both block and pipe production.

• Portable box discharging into one of three plant mixers. Electric-powered lift-trucks are used to move the boxes from point to point.

• Below, left: Six- to 24-in. diameter pipe are produced on this single-tamper machine.

• Below, right: The larger of the two pipe machines is used for making 6- to 48-in. diameter pipe.



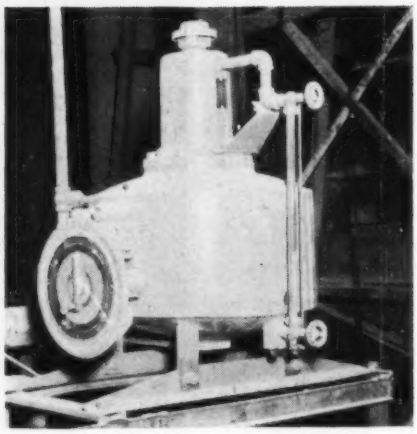
• A high-lift fork-truck is used for yarding all pipe production. This machine has a capacity of 6,000 lbs. Pictured here is D. F. Childs, plant manager.

• Right: A view of the block machine. This cored-pallet model makes two standard units in each cycle of operation.

The main machine room of the plant, a cinder block structure with Flexicore slab roof, measures 80 by 125 ft. In this space are housed the batcher, a Universal Concrete Pipe machine for making 6- to 24-in. diameter pipe, an Easterday machine for 6- to 46-in. pipe, a No. 7 Stearns Joltcrete block machine, individual mixers for each of these units, and such appurtenant equipment as welding and forming machines for making up cage reinforcing. Two Besser 18-cu. ft. batch mixers serve the block machine and the smaller of the two pipe machines. The larger pipe machine is served by a 28-cu. ft. Stearns mixer. All three mixers discharge into skip hoists which feed the supply hoppers.

The entire output of the plant is steam cured. Each of the six kilns measures about 20 by 80 ft. Steam is supplied by a stoker-fired low pressure boiler to open jets which discharge in front of Modine unit steam heaters located in each of the kilns. Four of the kilns are used for pipe production, one for block output and the remainder for curing the various special items produced in the plant. Pipe remain in the kilns for at least 72 hours, while a 24-hour cycle is generally used in curing block.

Pipe output in Standard's plant



• A water metering device installed at one of the mixers to assure accuracy in this important phase of concrete production.

ranges from 1,000 ft. in 8 hours when making 6-in. diameter units, to 400 ft. on 24-in. and about 200 ft. on 48-in. Sizes over 48-in. and up to 72 in. in diameter are poured from a special overhead mixer. Including large diameter units, the total output of the pipe section of the plant runs approximately 50 tons per 8-hour day. Production on the No. 7 Joltcrete ranges from 2,000 to 2,500 8-in. equivalents per day, bringing the overall output of the plant to about 100 tons per day of all products.

Standard produces a wide range of special precast concrete products, including 30-, 36-, 42- and 48-in. diameter manhole rings, catch basins, septic tanks, section markers, highway markers, and signal bases and battery boxes for railroads. Three sets of forms are available for each size of manhole, and if necessary the forms can be used twice a day. Portable vibrators are used in all the company's casting operations.

All yard handling of pipe is done with a Towmotor fork lift-truck of 6,000-lb. capacity, while racks of cured block are generally moved from the kiln to the yard with one of the Transporter electric lift-trucks. Because it supplies a varied market within a 100-mile radius of Springfield, the company normally stocks at least 2,000 tons of pipe in all diameters. Three company-owned flat bed trucks are in constant use for making deliveries, and additional trucks are hired as needed.

Standard was organized in 1931 by W. S. Gearhart, who is still owner of the company. The present plant, located on a 13-acre site south of Springfield, was built in 1940, and has remained substantially unchanged except for the recent installation of modern batching facilities. The company's original plant, located north of Springfield, was abandoned when operations were transferred to the present site. In addition to D. F. Childs, plant manager, and W. A. Russell, sales manager, the company employs about 25 men in all its operations.

Mountain Pumice Beds

(*From page* 131)

blended by means of the vibratory feeders and a Pioneer blending belt in the proper ratio to meet any and all specifications. When separate gradations are desired, the ⅛-in. to dust and minus ¼- to ⅛-in. are blended to be used as fine aggregate and the minus ½- to ¼-in. is sold as coarse aggregate.

A large bucket elevator, which uses Link-Belt chains and sprockets, carries this material into the loading hopper and from there it goes into the freight cars and is shipped to all points east of the Rockies.

The question may occur to the reader as to how long the mine may be capable of producing. Mr. Counts believes the deposits in the Jemez Mountains to be practically inexhaustible, as there are thousands of acres that can be exploited and no engineer has yet been able to estimate the quantity in the ground. As in the case of oil and gas, none of our present readers will be here at least when a perceptible shortage appears.

Likewise the present supplies will be augmented as demand increases, as there are several other large fields in the Southwest which have not been touched. But they will be soon if the pumice producers of the Southwest have anything to say about it.

The Dragon Tells a Parable About Whipped Cream

That fire-breathing pet of the Lawrence Portland Cement Company, its *Dragon* (see Pit and Quarry, October, 1948, p. 92), recently gave utterance to an interesting and informative dissertation on—guess what—cream and whipped cream. Well, no, the *Dragon* wasn't just talking about an orthodox adjunct of most American desserts. He was discoursing upon the subject of cement and air-entrained cement, especially on the difference between the two, and using a familiar culinary illustration. Said he:

"Air-entraining portland cement is a comparatively new product, and its manufacture marks important progress in the never-ending effort to create better cement for better concrete.

"A bag of air-entraining cement looks just about the same as any bag of ordinary cement. Both are fine, dry powder. When air-entraining cement is mixed with water and aggregates, however, it develops qualities quite different from those of ordinary cement. The paste (cement mixed with water) of concrete made with ordinary cement might be visualized as something comparable to ordinary rich cream, the paste of concrete made with air-entraining cement more closely resembling *whipped* cream.

"This difference is of very great importance. If some one were to dump a handful of raisins into a bowl of ordinary cream, stir the mixture and then let it settle, the raisins would all drop to the bottom of the bowl. If, however, the cream had been whipped before the raisins were added, they would be found to be more or less evenly distributed through the whole mass.

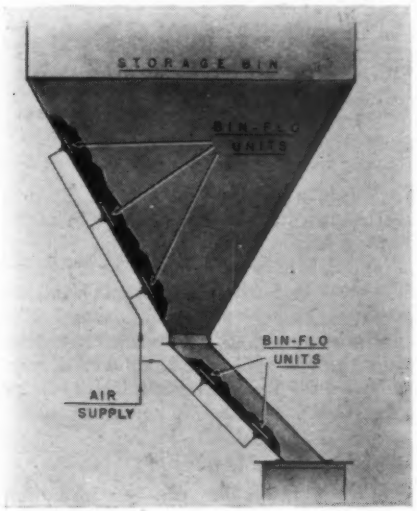
"When pebbles and stones (aggregates) are added to air entraining cement, they are spread uniformly through the mixture just like the raisins in the whipped cream. This makes for a better and more buoyant concrete, one which, on roads, for example, permits more readily of expansion or contraction with changes of temperature. . . ."

Thomas E. Bertelsen has been named district sales manager for the Indiana-Michigan district of the Universal Atlas Cement Company. Mr. Bertelsen succeeds Theodore R. Prell, deceased.

NEW MACHINERY and SUPPLIES

● New Aerating Device

The Bin-Dicator Company, 14615 E. Jefferson Ave., Detroit 15, Michigan, has introduced "Bin-Flo," a new aerating device to provide uniform and steady flow of bulk materials from bins, hoppers, and chutes. Bin-Flo is said to provide an



economical solution to the restriction and stoppage of bulk materials in bins and chutes.

The unit is a small plate ¾ by 7⅛ in. thick which is readily located at points where flow is restricted. Low-pressure air is injected into the material through a special fabric diffuser, causing the material to flow freely. The manufacturer claims that it will not plug up even with the most finely-ground material. Bin-Flo can be used in conjunction with "Bin-Dicators" or can be installed independently. Models are provided for thin-walled bins and chutes and for concrete and other thick-walled hoppers. Piping can be run either outside thin-walled bin or inside thick-walled containers.

● Wall Coating

"San-Finish," offered by the Nall Corporation, St. Charles, Ill., is a sandy-textured wall finish for direct application upon concrete or cinder block, insulation board, wallboard, brick and plywood walls. Manufacturers claim that it will coat these types of walls with a hard, tough, durable finish.

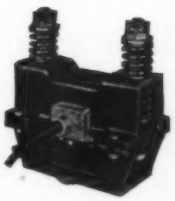
It is applied with a paint brush or with spray equipment. The formula includes processed soybean oil and styrene with silica sand and pigment. It is recommended for covering blemishes and cracks in old walls and for decorating rough plastered surfaces. The coating it produces is said to be highly moisture-resistant; it is also washable and will not blister, become soft or support combustion. One gallon covers approximately 125 sq. ft.

BETTER CONCRETE PRODUCTS WITH

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATORS



Powerful, pulsating electro-magnets — that vibrate 3600 times per minute from 110 or 220 or 440 volt, 60 cycle A.C.

No cams, gears, eccentrics, motors, etc.

ON BLOCK MACHINES

Their powerful vibrations will produce a denser, stronger block, and improve its appearance.

Applied to either the mold box or the pallet, depending upon the design of the machine.

For hand or power machines.

ON PRECAST FORMS

Improve the quality and appearance of all types of pre-cast concrete products — sewer pipe, lintels, joists, standards, burial vaults, etc.

Speed up placing and setting and eliminate hand rodding and pounding.

Write for illustrated literature

SYNTRON CO. 385 Lexington, Homer City, Pa.

SPEED PRODUCTION — DECREASE INJURIES

Designed by specialists for safety, these thumb-type hand pads offer maximum protection and cool comfort at minimum cost. Heavy genuine horse-hide. Workers like them.

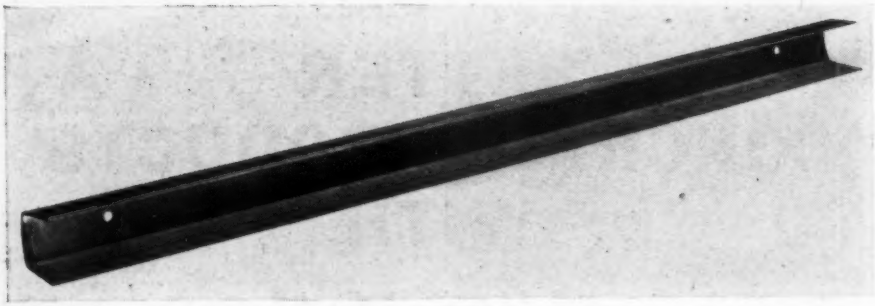
Sample pair — $1.00 — Dozen pairs — $11.40.

ORDER TODAY DIRECT FROM

A DEPENDABLE GUIDE TO SAFETY
GENERAL SCIENTIFIC EQUIPMENT COMPANY
TESTED INDUSTRIAL SAFETY PRODUCTS

2735 W Huntington St., Philadelphia 32, Pa.

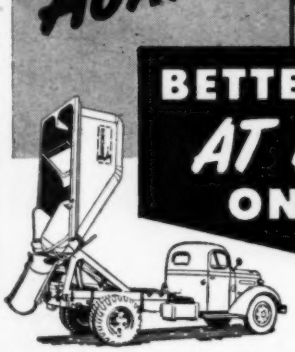
Gloves ● Respirators ● Goggles ● Shields ● Aprons ● Helmets



Shown above is the "Rustication Joint", a metal device designed to prevent corrosion in concrete masonry construction. Such joints are ordinarily of wood, and therefore seldom re-usable. Williams interlocking-section Rustication joints, being constructed of metal, can be used several times. When treated with a sticky type of oil, they are more easily removed, save labor in placing and cut breakage of corners. Williams Form Engineering Corp., Box 925, Madison Square Station, Grand Rapids, Mich., is the manufacturer.

IN DENVER IT'S DUMPCRETE CONCRETE* AGAIN!

BETTER CONCRETE AT LOWER COST... ON ALLEY PAVING JOB



M. R. Latimer of Denver is getting compliments on his low-cost Dumpcrete Concrete. He writes, "The city inspector says our concrete is *superior to that mixed in transit.*"

Latimer mixes his air-entrained concrete at a central plant where the mix can be carefully controlled. "After a recent 13-mile, 35-minute haul," he reports, "concrete was well-graded and uniform, with no surface water on the load; and it could have been hauled a lot farther without segregation.

"Best of all," he continued, "our overall costs have been substantially reduced."

Concrete men in 42 states are getting better concrete at lower costs with the Dumpcrete. You can too. Write for more information.

The Dumpcrete Body

Lightweight, watertight, loads fast, dumps fast or slow, places anywhere, costs less to buy and run. Ideal for hauling aggregate, coal and earth.

• • •

*** Dumpcrete Concrete**

is central-mix air-entrained concrete hauled and placed with the speedy, low-cost Dumpcrete. Provides top-quality, plastic, workable and non-segregating concrete, saving up to $1.00 per yard.

DUMPCRETE DIVISION
MAXON CONSTRUCTION CO., INC.
509 Talbott Bldg., Dayton 2, Ohio

● All-Weather Cab

A weather-tight cab for driver protection can now be obtained for installation on the "Yardlift-40" and "Yardlift-60" models of Clark Equipment Company's pneumatic-tired fork truck series. Inasmuch as these trucks are used primarily

for outdoor handling operations, the protecting cab has proved valuable in maintaining driver efficiency.

The cab is constructed of heavy-gauge sheet steel for durability; ample windows provide side and forward vision. The roof window, of glare-proof plastic, provides ample visibility for high tiering.

Industrial Truck Division, Clark Equipment Company, Battle Creek, Mich.

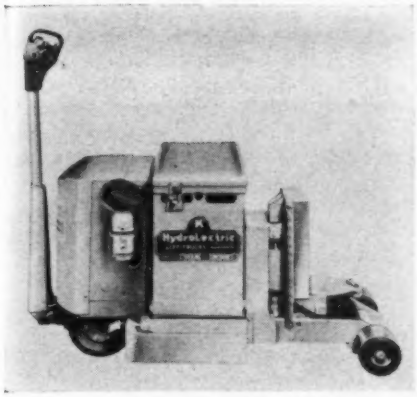
● Induction Motor

Silicone resins for winding insulation and silicone grease for bearing lubrication make possible a totally-enclosed non-ventilated Westinghouse motor in a 5-hp. 4-pole rating in the same frame sizes as the open motor of the same rating. This permits reductions of as much as three frame sizes from present standard Class A insulated totally-enclosed motors, according to the manufacturer's

claims. The efficiency, power factor and torque of such a motor are comparable to those for an open motor of the same rating.

The accompanying illustration shows this size reduction possible through the use of silicones. The motor on the left is a Westinghouse 5-hp., 1750-r.p.m., 4-pole, silicone insulated all-steel "Life-Line" motor in the 254-frame; the one on the right is rated the same but is Class A insulated and is in a 326-frame.

By using silicone the weight is reduced from 250 pounds to 145 pounds, or 60 percent of the Class A insulated motor. Height is reduced 3¼ inches; length, 7¼ inches.



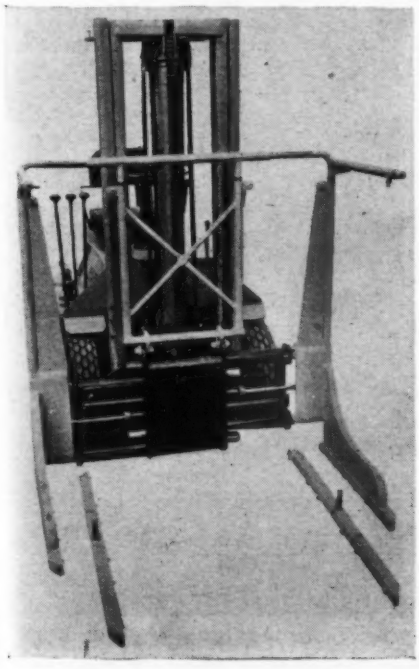
• A new model lift-truck designed to pull live and semi-live skids completely by power has been announced by Lift Trucks, Inc., 2423-2431 Spring Grove Ave., Cincinnati, O. The "Hyrolectric KTL," reportedly cuts man-hours on handling jobs to less than one-half. A wheel base of only 40 in. permits short turns in close quarters. Rated capacity is based on pulling a semi-live skid loaded with 4000 lbs.

• Box Handler

Latest addition to the recently developed "Load-Grab" attachment for palletless materials handling is a box clamp attachment for use with Hyster's Model "20" lift truck.

Adaptable to the standard hydraulic-controlled Load-Grab as optional equipment, it includes box clamp arms for grasping the load, sliding side support assemblies which may be adjusted to fit boxes of varying sizes, and an overhead stabilizer bar to insure accurate stacking and to prevent the load from shifting or separating. Box clamp arms are regularly 27 in. long, but if desired, may be ordered in 42-in. lengths.

Like the standard Load-Grab, the box handler will carry loads up to 1,780 pounds. The clamp arms will spread from a minimum 25 in. to a maximum 62 in. and may be lowered to ground level. The Hyster Co., Portland 8, Ore.



• The neat appearance of this set of precast steps does much to give visitors a pleasing impression of the home.

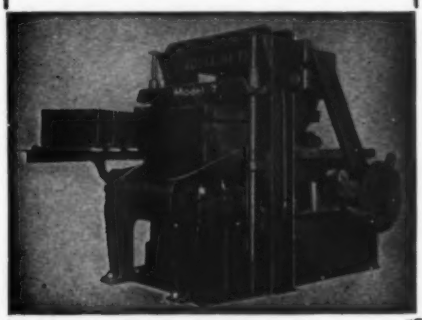
Rapid Intallation, Economy Features of Precast Steps

A good approach as a "must" in creating a favorable impression upon the visitor is seen in this neat set of concrete steps. The patented interlocking process utilized in producing the fully-reinforced precast concrete units is the result of experiment and research on the part of Louis B. Clark of Beaumont, Tex.

Plants in four Southern cities have made the units for 10,000 installations, and six additional areas have been contracted for, with plants preparing to go into production. Territories are being assigned on a franchise basis, with licenses written through the National Pre-Cast Sales & Service, 715 Louisiana National Bank Building, Baton Rouge, La.

Quick installation of steps, stoops, stairs and porches of any given height and width is one important advantage of these products. Moreover, the use of hollow units, saving a considerable amount of cement in each installation, is a cogent argument for their use in this period of shortages.

The Vibration Machine Supreme

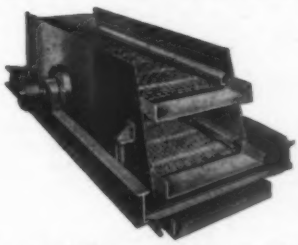


Vibration under pressure — 7,200 blows per minute—and ruggedly built to give long life, the Joltcrete machine is the choice of the wise concrete-products operator. Produces clean-cut, high strength units in any size, and gets the most out of a bag of cement. Built in three sizes with capacities of 7 to 9 standard units per minute.

Stearns Clipper Stripper Machines; Stearns Joltcrete Machines; Stearns Mixers; Cast iron and Press Steel pallets. Straublox oscillating Attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

VIBRATING SCREENS



We manufacture 3 lines of vibrating screens for almost any type of screening operation; wet or dry, heavy or light materials in large capacities. Make your product more uniform and of higher quality with a Bonded screen.

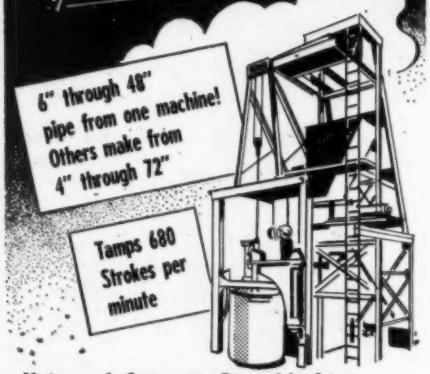
TRUCK SCALES

Built in capacities from 10 to 40 tons and with platform sizes to 50 feet. Only Bonded has the patented one-piece, self-aligning rocker bearing in the weighing beam, assuring greater accuracy and continuous service. Used by foreign and U.S. governments and the U.S. armed forces.

BONDED SCALE & MACHINE CO.
129 Bellview Ave. — Columbus 7, Ohio
Phone:
Garfield 2186 — University 2832, Eves.
Immediate Delivery
Manufacturers of Scales, Crushers, Conveyors and Vibrating Screens.

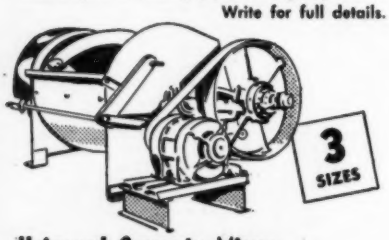
Universal

Pipe-Making Machines are real profit makers because they're built by pipe-makers! ... They produce more pipe in fewer man-hours ... at greater profit!



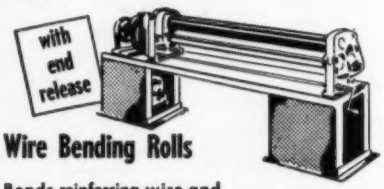
Universal Concrete Pipe Machines

Real money-makers because they make finest ASTM Specification pipe at lowest cost of operation and maintenance. Designed and built by experts with a quarter century pipe making experience. Write for full details.



Universal Concrete Mixers

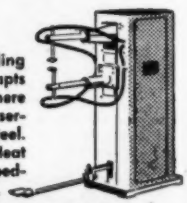
Work horses for manufacturers of concrete products. Simple, dependable over years of continuous operation. Save on first cost and upkeep. Capacities: 28, 42 and 50 cu. ft. Send for information.



Wire Bending Rolls

Bends reinforcing wire and steel plate to any radius, accurately, quickly. Quick, easy removal of completed cages. Extra heavy frame and oversize bearings, with covered gears and overload safety feature.

Wire Mesh Welder



Specially designed for welding reinforcing wire (but adapts for many other uses). Best there is for steady heavy-duty service. Fully enclosed in steel. Water-cooled electrodes. Heat control switch. Swivel foot pedal leaves both hands free.

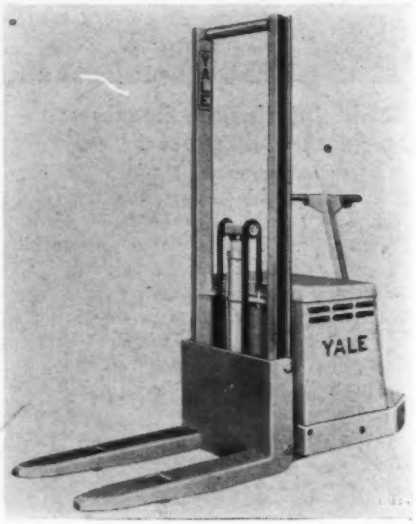
"It's better to own Universal Equipment..... ...than to compete against it!"

Write Today for details, prices
UNIVERSAL CONCRETE MACHINERY CO.
207 South High Street Columbus, Ohio

● Electric Pallet Truck

A new low-cost high-lift "Worksaver" electric pallet truck is announced by The Yale & Towne Manufacturing Company, Philadelphia Division, 4530 Tacony Street, Philadelphia. This new 2,500-lb.-capacity pallet truck, the Model M25HP, is battery operated for both travel and lifting loads; it is 39 to 31 in. in overall dimensions, not including the forks, and lifts pallets 66 in. for overhead tiering.

The mast is 83 in. high and permits the truck readily to enter such low headroom spaces as street trucks and freight cars. The 1,965-lb. weight of the truck-and-battery permits handling loads where larger heavy-duty trucks could not be used.



The small overall dimensions of the motorized pallet truck allows operation in such confined areas as narrow aisles, crowded production zones and in elevators and public carriers.

Miniature Display Blocks Help to Sell Masonry Jobs

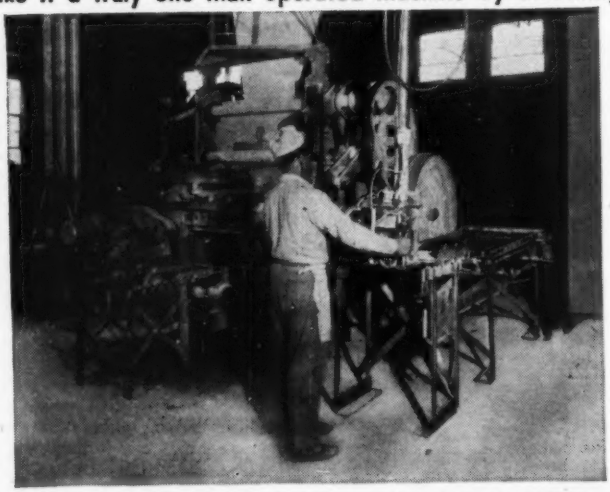
An idea which started as the hobby of an aluminum foundryman and "clicked" with the concrete-products industry is the casting of miniature blocks for demonstration purposes.

Thousands of these little units have been shipped by the Frantz Pattern & Foundry Co., 2201 E. Artesia St., Long Beach 5, Calif., to plant operators and block-machine manufacturers who use them on a desk or table in the office to show prospective purchasers of regular blocks just how they lay up in walls, corners, and partitions of a building and to point out the advantages of this type of construction.

The units are cast of aluminum to exact scale (about 1/5 the size of a regular concrete block), a miniature of an 8- by 8- by 16-in. unit, for example, measuring 1½- by 1½- by 3-in. They are available in replica for any standard or patented design on the market. One machine manufacturer alone has been buying about half the output for use of its franchises, architects, and builders.

Why a man to handle 50 tons of steel pallets daily when a 1/4 H. P. motor will do the same work better?

Modernize your present 18" x 26" plain pallet magazine fed block machine. Make it a truly one man operated machine by attaching a



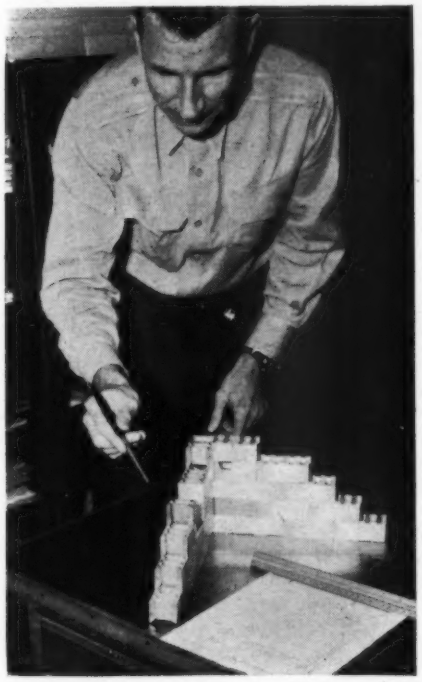
DOMINE AUTOMATIC PALLET FEEDER*

1. You cut your operating labor on each machine by one-half.
2. You cut your lift truck operations by one-half by eliminating the moving of empty racks in plant.
3. You can cube your cured blocks in front of block machine.
4. You double the life of your pallet feeder chain as only a few pallets are carried in magazine.

*Patent Applied For

DOMINE AUTOMATIC MACHINERY CORP.
155 Gould St. Rochester 10, New York

Recently a block maker in the Philippines placed an order for a large quantity of the miniatures and wanted them as quickly as possible, agreeing even to pay air-express charges of $200 on the shipment!



• Aluminum miniatures of concrete blocks aid in selling concrete masonry construction.

I. O. Frantz, head of the concern, became interested in turning out the little blocks because of his close connection with the concrete-products industry, for which he has been making aluminum block pallets and pipe rings. Samples of the miniature units are mailed to established block plants and equipment makers.

Oscar M. Lund was recently appointed vice-president and general manager of the Barrett-Cravens Company.

Mr. Lund has been with the firm since 1935; he had been previously associated with Olson & Company in the field of conveyor design and manufacture.

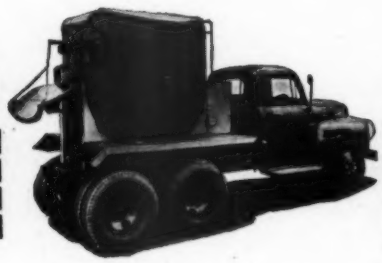
• Scene at the plant of the Salina Concrete Products Company, Salina, Kan., showing a "Stevedore Jr.," made by the Rapids-Standard Co., loading a truck with concrete block. A gravity conveyor moves the units to the front of the truck bed, eliminating manual handling from the loader to the unloader on the truck. The team of Stevedore, Jr., and gravity conveyor effects considerable savings in time and cost for the Kansas firm.

THE HUNKINS

Hi-Lo

CONCRETE TRANSPORT MIXER CO.

TRUCK MIXER



REVOLUTIONARY TRUCK MIXER DESIGN

THE RESULT OF 18 YEARS OF TRUCK MIXER MANUFACTURING and 25 YEARS OF CONCRETE MIXING EXPERIENCE

By

CONCRETE TRANSPORT MIXER CO. INC.

4985 FYLER AVE. ST. LOUIS 9, MO.

Increase Production

Increase Quality

Increase Profit

Oswalt Dual Vibration added to your Besser Vibrapac will increase your out-put and quality with your present equipment.

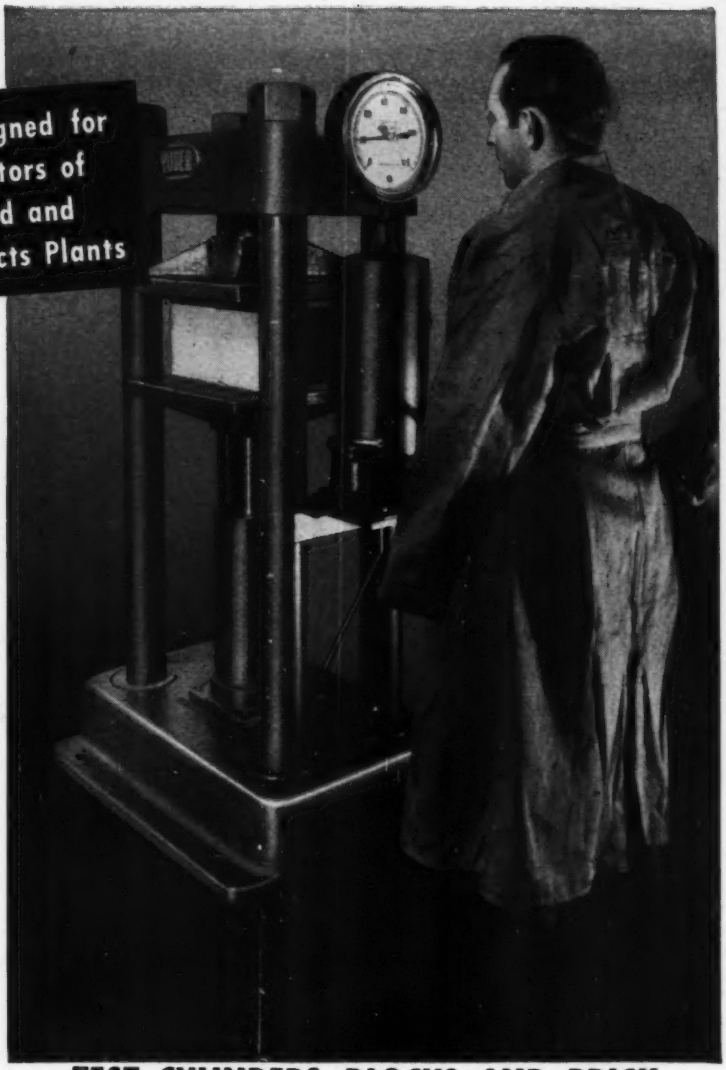
OSWALT ENGINEERING SERVICE CORP.

1335 Circle Ave.

Forest Park, Ill.

Phones: COlumbus 1-7073—Forest 3898

Especially designed for use by operators of Ready-Mixed and Concrete Products Plants



TEST CYLINDERS, BLOCKS AND BRICK

Develop more economical Mixes and insure Quality Control with your own

CONCRETE YODER MACHINERY

Concrete Testing Machine

It is built to meet all the essential requirements of the American Society for Testing Materials, yet is offered at a price so low as to make it a highly profitable investment for ready-mixed concrete, and concrete products plants.

With this machine you can make as many tests as you like, daily, or as often as you wish, and *know the results overnight.* Even more important, you can by *examining the fractures* find out the nature of, and reasons for, defective material, so that you may, without further delay, rectify anything that may have gone wrong with your aggregate mixes or manufacturing operations.

With a Yoder testing machine you will, at trifling cost, obtain a much better quality control than you can obtain by belated reports from the outside which merely show compressive strength. It enables you to develop more economical mixes and insures a uniformity obtainable in no other way. This in itself is a powerful factor in building up sales on a quality basis.

Get the facts about this machine and the services that go with it.

Concrete Machinery Division
THE YODER COMPANY
5551 Walworth Avenue • Cleveland 2, Ohio